

DEPARTMENT OF AGRICULTURE.

SPECIAL REPORT—No. 36.

REPORT

UPON

STATISTICS OF GRAPE CULTURE

AND

WINE PRODUCTION

IN THE

UNITED STATES

FOR

Cornell University  
Agricultural  
Experiment Station.  
Ithaca, N. Y.

—Free—

COLLECTED AND COMPILED

UNDER THE DIRECTION OF

DIRECTOR.

HON. WM. G. LE DUC, COMMISSIONER OF AGRICULTURE,

BY

WM. McMURTRIE, Ph. D.

WASHINGTON:

GOVERNMENT PRINTING OFFICE.

1881.



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## LETTER OF TRANSMITTAL.

Hon. WM. G. LE DUC,  
*Commissioner of Agriculture:*

SIR: I have the honor to submit the following results of an inquiry instituted for the purpose of determining the surface planted in vines, and the quantity and value of the production of wine in the United States:

The want of knowledge of this subject, as shown in the frequent demands made upon the department, the increasing interest being manifested in commercial circles in the product of our cellars; an interest due partly to the improved character of the American wines, and doubtless also largely due to the stringency in foreign wine markets dependent upon the decline of the production of the European vineyards, particularly those of France, seemed to render it advisable to collect and publish the statistics given below in advance of the more extended report on grape culture and wine making in course of preparation, and to be issued at an early day.

The results are of value as showing the dimensions the wine industry of the country has attained, the consequent importance of giving greater encouragement to this branch of agricultural economy, the location of the production, and local values of the product. They show that consumers in any part of the United States are conveniently near to centers of production, and that little necessity prevails for looking to foreign cellars for supplies of *ordinary* table wines at least. Of course we cannot hope, in our comparatively young vineyards, and with our, as yet, comparatively untried varieties, to produce wines that will be received with the same favor as those of the better vineyards of the Old World, but we are constantly improving, and it is certain that in the table wines of low alcoholic strength we are now surer of obtaining from our own vineyards products more free from adulteration, and consequently more healthy in general than the wines ordinarily imported in casks, and we may hope in the very near future to render much of the present importations unnecessary and even undesirable.

There is, it is true, much to be done in the improvement of the culture of the vineyards, and many reforms to be made in the cellars of producers, yet even now good sound wines are not hard to find, and dealers and consumers will do well to study these sources of supply. The importance of this is shown in the following figures representing the importations of foreign wines to the United States during 1879 and 1880:

Years.	In casks.		In bottles.		Total.
	Gallons.	Value.	Dozens.	Value.	Value.
1879 .....	4, 254, 248	\$2, 213, 139	345, 066	\$2, 667, 179	\$4, 880, 318
1880 .....	4, 031, 445	2, 470, 423	429, 029	3, 465, 668	5, 936, 091

This represents a total of about 5,000,000 gallons for each year, the whole quantity being slightly less in 1880 than in 1879, while on the other hand, the total cost in 1880 was over 25 per cent. greater than in 1879.

In collecting the information embodied in the results given below, it was our aim first to secure estimates from those directly engaged in grape culture and wine making, or practically interested in the advancement of the industry, then from the regular correspondents of the department, and finally from the postmasters of the county towns.

The following general circular was prepared and distributed :

DEPARTMENT OF AGRICULTURE,  
Washington, D. C., November 25, 1880.

SIR: This department is desirous of securing reliable information concerning the production of grapes and wine throughout the country, and for this purpose respectfully requests that you will do us the favor to make a careful estimate for your county of the number of acres planted in vines, the average weight of grapes produced per acre, the proportion used in wine making, the average yield of wine per acre, and the average price of wine per gallon.

Please enter your estimates opposite the appropriate heads in the blank table given on the other side of this sheet and forward same to this department as soon as possible.

Very respectfully,

WM. G. LE DUC,  
*Commissioner of Agriculture.*

Name of writer :

Post-office :

County :

State :

Number of acres planted in vines :

Average weight of grapes produced per acre :

Proportion of the grape crop used in wine making, per cent. :

Average yield of wine per acre, gallons :

Average value of wine per gallon :

#### REMARKS.

Please enter here any information you think will prove valuable in this connection.

Copies of this were sent to all; but to those who had furnished replies to a former circular, and are directly engaged in grape culture, the following was sent at the same time :

DEPARTMENT OF AGRICULTURE,  
Washington, D. C., November 25, 1880.

SIR: Your reply to our circular of questions relative to grapes and wine was duly received and greatly appreciated. In the replies to that circular, the blank table of statistics it contained was in but few cases filled up. It is of importance to the grape and wine interest in this country that the quantity and location of the production for the year 1880 should be generally known. I therefore send you the inclosed circular in the hope that you may be induced to make the estimates and return therein requested. You will doubtless be able to secure the information necessary for making these estimates by consulting with your neighbors and those interested or engaged in grape-growing or wine-making throughout your county. If you do not feel that you are able to make the estimate, please hand the circular to some gentleman of your acquaintance who will do it.

Very respectfully,

WM. G. LE DUC,  
*Commissioner of Agriculture.*

To the postmasters the following was inclosed:

DEPARTMENT OF AGRICULTURE,  
Washington, D. C., November 25, 1880.

TO POSTMASTERS :

GENTLEMEN: I have the honor to request that you will either secure and return to this department at your early convenience the estimate asked for in the inclosed circular, or that you will hand the circular to some gentleman of your acquaintance whom you consider will be able and willing to do so.

Very respectfully,

WM. G. LE DUC,  
*Commissioner of Agriculture.*

Of the general circular about 15,000 copies were distributed, and we regret to say that not more than one-half of them were returned. This apparent lack of interest in the subject is to be ascribed partly to the difficulty of making reliable estimates, but in the large proportion of cases it is doubtless due to indifference in the subject. Still, a sufficient number of estimates were obtained to give fair returns for the different States. We have constructed the following detailed tables for the several States, giving all of the general estimates returned. Many of the reports had to be discarded because they referred to single vineyards or to limited localities rather than to the entire counties, and, therefore, were of little or no value in the work. It is even possible that some of these figures were entered in the tables, no indication with regard to them being given in the returns, but constant endeavor was made to exclude them. However, they will serve to moderate the possibly generous or even extravagant estimates of others, and thus bring the result to more nearly the correct figure; for, since the estimates are not made by actual count or thorough canvass, absolute accuracy cannot be claimed for them. Some counties in which considerable quantities of wine are made may even be omitted from the tables from want of returns; so that taking everything into consideration our results may be accepted as under rather than over the actual production. The following detailed table for States and counties will enable each reader to make his own estimation of the total crop for each State:

*Table showing the total average yield and value of wine produced in the several States.*

States.	Area in vines.	Production.	Value.
	<i>Acres.</i>	<i>Gallons.</i>	
Alabama.....	1,111	422,672	\$399,705 00
Arkansas.....	893	72,750	112,401 87
California.....	32,368	13,557,155	4,046,865 80
Connecticut.....	64	5,336	6,076 75
Delaware.....	125	4,050	4,050 00
Florida.....	83	11,180	15,415 00
Georgia.....	2,991	903,244	1,395,521 62
Illinois.....	3,810	1,047,875	809,547 20
Indiana.....	3,851	99,566	91,719 40
Iowa.....	1,470	334,970	346,398 60
Kansas.....	3,542	226,249	190,330 75
Kentucky.....	1,850	81,170	80,908 75
Maine.....	71	1,500	2,850 00
Maryland.....	699	21,405	19,151 00
Massachusetts.....	227	6,338	10,050 50
Michigan.....	2,266	62,831	75,617 30
Minnesota.....	63	2,831	2,446 00
Mississippi.....	432	209,845	310,532 75
Missouri.....	7,376	1,824,207	1,320,050 40
Nebraska.....	280	5,767	8,982 00
New Jersey.....	1,967	215,122	223,866 70
New Mexico.....	3,150	908,500	980,250 00
New York.....	12,646	584,148	387,308 83
North Carolina.....	2,639	334,701	268,819 25
Ohio.....	9,973	1,632,073	1,627,926 58
Oregon.....	126	16,900	9,240 00
Pennsylvania.....	1,944	114,535	128,097 00
Rhode Island.....	55	262	516 50
South Carolina.....	193	16,988	22,356 25
Tennessee.....	1,128	64,797	90,796 00
Texas.....	850	35,528	44,704 87
Utah.....	658	114,975	175,825 00
Virginia.....	2,099	232,479	200,045 25
West Virginia.....	406	71,026	61,461 80
Wisconsin.....	217	10,968	15,559 85
Total.....	181,583	23,453,827	13,456,174 87

## GRAPE CULTURE AND WINE PRODUCTION.

Table showing the production of grapes and yield of wine in the United States by counties.

## ALABAMA.\*

Counties.	Acres in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Gallons.	Total production.	Total average value of wine crop.
Barbour.....	20		50	23	\$2 00	4,230	\$8,460 00	20	4,230	88,460 00	\$8,460 00
Cherokee.....	34			140	2 50	782	1,955 00	34	782	1,955 00	1,955 00
Coffee.....	10	2,000	10	325	1 25	1,400	1,750 00	10	1,400	1,750 00	1,750 00
Colbert.....	8	5,000	10	325	1 25	2,600	3,250 00	8	2,600	3,250 00	3,250 00
Cook.....	25		50	50	1 00	3,125	3,125 00	25	3,125	3,125 00	3,125 00
Couch.....	80	3,500	40	350	1 00	1,750	1,750 00			1,750 00	1,750 00
Cullman.....	400	2,600	33	33	1 00	26,600	26,600 00			26,600 00	26,600 00
Do.....	40		50	10	1 50	8,460	12,690 00	40	8,460	12,690 00	12,690 00
Lee.....	5	2,250		900	75	337,500	253,125 00	5	337,500	253,125 00	253,125 00
Limestone.....	500	13,500	75		1 00		84,600 00	500		84,600 00	84,600 00
Mobile.....	30				2 00	42,300	16,200 00	200	42,300	16,200 00	16,200 00
Perry.....	200		50	1,200	2 00	8,100		9	8,100		
Pike.....		18,000	75								
Wilcox.....	9										
Total.....								1,111	422,672		399,705 00

\* In this State used State averages for making totals in cases of blanks.

## ARKANSAS.

Bradley.....	60	5,500	90	360	1 50	19,440	29,160 00	45	13,657	19,501 87	19,501 87
Do.....	30	5,500	75	350	1 25	7,875	9,843 75			43,875 00	43,875 00
Carroll.....	300	4,000	75	100	1 50	29,250	43,875 00	390	29,250	6,750 00	6,750 00
Drew.....	30	6,000	90	200	1 25	5,400	6,750 00	30	5,400	15,312 50	15,312 50
Franklin.....	100	2,400	50	175	1 75	8,750	15,312 50	100	8,750	9,432 00	9,432 00
Garland.....	60		40		1 50	6,288	6,300 00	60	6,288	6,300 00	6,300 00
Jefferson.....	15	1,400		1,000	3 50	1,800	562 50	15	1,800	562 50	562 50
Pope.....	38	1,635	12	65	1 50	450	562 50	38	450	399	399
Pratt.....	15	600	10	300	1 25	399	5,949 00	15	399	5,949 00	5,949 00
Do.....	15	4,000	10	266	1 25	3,966	3,300 00		3,966	3,300 00	3,300 00
Pulaski.....	92	3,000	20	215	1 50	1,650	3,300 00	92	1,650	3,300 00	3,300 00
Sebastian.....	50	1,000	50	66	2 00	1,240	360 00	50	1,240	360 00	360 00
Searcy.....	3		100	80	1 50			3			



# GRAPE CULTURE AND WINE PRODUCTION.

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Union	30	75	40	1 00	900	900 00	30	900	900 00
Washington	25						25		
Total							803	72,750	112,401 87

CALIFORNIA.	8,000	75	600	0 25	108,000	270,000 00	240	108,000	270,000 00
Contra Costa	240	80	300	87	144,000	125,280 00	600	144,000	125,280 00
Calaveras	600	100	1,000	30	180,000	54,000 00		490,000	137,000 00
Fresno	180	25	1,600	30	800,000	320,000 00			
Do	2,000	95	1,000	25	5,427,350	1,356,837 50			
Los Angeles	5,713	10,000	1,000	25	4,284,750	1,071,187 50			
Do	5,713	10,000	1,000	25	3,404,735	733,894 00			
Do	5,713	10,000	1,000	25	3,990,100	990,775 00			
Do	6,225	10,000	1,000	25	3,376,242	675,248 40			
Do	6,225	10,000	1,000	25	2,368,300	355,395 00			
Do	1,200	95	400	15	750,000	171,200 00			
Do	1,200	95	400	15	1,600	1,200 00			
Mendocino	30	15	400	75	1,326	1,444 50			
Do	600	60	150	50	54,000	2,700 00			
Merced	4,000	100	800	20	2,400,000	480,000 00			
Napa	5,000	80	600	33	3,200,000	1,056,000 00			
Do	3,907	90	700	33	2,461,410	812,265 00			
Do	3,907	90	500	25	1,735,000	438,750 00			
Do	4,500	90	550	25	2,227,500	556,875 00			
Do	3,400	10,000	750	25	2,422,300	605,625 00			
Nevada	163	90	600	35	91,260	31,941 00			
Do	152	65	480	75	47,904	35,928 00			
Placer	550	60	800	30	261,000	79,200 00			
Do	100	60	240	60	16,400	9,840 00			
Santa Clara	8,000	75	500	30	13,000,000	1,900,000 00			
Do	3,500	80	400	20	1,120,000	224,000 00			
Santa Cruz	275	80	500	25	110,000	27,500 00			
Do	300	50	350	25	52,500	13,125 00			
Do	250	85	100	18	21,250	3,825 00			
San Diego	200	50	600	40	60,000	24,000 00			
Do	56	15	375	65	3,150	2,047 00			
San Joaquin	550	66	850	25	280,500	70,125 00			
Do	550	70	700	33	192,500	96,250 00			
Do	550	10,000	800	33	308,000	102,666 00			
Do	550	10,000	800	33	249,750	62,437 50			
Do	550	10,000	800	33	333,640	83,250 00			
San Luis Obispo	40	4	1,400	50	660,000	330,000 00			
Solano	2,000	60	550	50					

\* Estimated 15 pounds per gallon.  
 † 16,985 tons grapes=2,836,750 gallons of wine; 6,500 acres in all.  
 ‡ General Naglee's estimate.  
 § At the vineyard.  
 || 40 per cent. used for raisins, 2,000 pounds of raisins to the acre; value of raisins per acre, \$140.

Table showing the production of grapes and yield of wine in the United States by counties—Continued.

GRAPE CULTURE AND WINE PRODUCTION.

CALIFORNIA—Continued.

Counties.	Acres in vines.	Yield of grapes per acre.	Proportion of grape-crop used in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acre-age in vines.	Total average wine production.	Total average value of wine crop.
						Gallons.	Gallons.			
Sonoma.....	7,000	7,000	100	365	\$0 30	2,555,000	\$766,500 00			
Do.....	7,000 <sup>1</sup>	3,000	84	420	25	2,469,000	616,900 00			
Do.....	7,500	8,000	85	450	23	3,037,500	698,525 00	6,541	2,292,120	\$594,598 00
Do.....	7,000 <sup>2</sup>	8,000	90	400	26½	2,320,000	607,800 00			
Do.....	3,750	6,000	90	375	27	1,265,625	341,618 75			
Do.....	7,000	6,000	90	350	25	1,905,000	476,250 00			
Stanislaus.....	200	6,000	50	450	60	125,000	27,000 00	200	45,000	27,000 00
Tehama.....	350	6,000	90	400	50	125,000	63,000 00			
Do.....	120	10,000	100	400	50	48,000	24,000 00	235	87,000	43,500 00
Tuolumne.....	3,000	8,000	75	650	25	1,462,500	365,625 00			
Do.....	3,000	6,000	75	500	20	1,125,000	225,000 00	3,000	1,293,500	295,312 00
Ventura.....	750	6,000	75	200	75	11,250	8,437 50	750	11,250	8,437 50
Yolo.....	600	12,000	50	700	25	210,000	52,500 00			
Do.....	10,000	10,000	33	700	25	138,000	34,650 00			
Do.....	600	10,000	40	650	35	156,000	55,600 00			
Do.....	500	12,000	50	800	20	200,000	40,000 00			
Total.....								32,368	13,557,155	4,046,865 80

(<sup>1</sup>) 10,000 acres planted; 16 per cent. used for brandy; (<sup>2</sup>) 11,000 acres planted.

† Brandy 1.75 per gallon; 2 tons of raisins per acre.

CONNECTICUT.

Fairfield.....	25	6,000	10	375	1 00	937 50	937 50	25	937 50	937 50
Middlesex.....	4	2,500	95	120	3 00	456	1,268 00	4	456	1,368 00
New Haven.....	40	4,000	50	200	1 00	4,000	4,000 00			
Do.....	40	4,000	10	200	1 00	4,000	4,000 00			
Do.....	40	6,000	35	400	1 00	5,600	5,600 00	35.5	4,142.5	3,771 25
Do.....	22	6,000	30	450	50	2,970	1,485 00			
Total.....								64.5	5,336	6,076 75

COLORADO.

Arapahoe	25	700				25	
Boulder	35	}					
Do	20					27	
Total						52	

DELAWARE.							
Kent*	75	6,000				75	
Sussex	50	4,000	27	300	1 00	50	4,050 00
Total						125	4,050 00

\* Grapes pay from \$100 to \$200 per acre.

FLORIDA.

Alachua	20	200	20	10	1 00	40	40 00
Calhoun	10		50	500	1 00	2,500	2,500 00
Clay			5	500	1 00	125	125 00
Hamilton	15		5	500	1 00	375	375 00
Suwannee	33	6,000	50	500	1 50	8,250	12,375 00
Total						11,180	15,415 00

GEORGIA.

Appling	15	1,500	25	50	75	187	130 62
Baldwin	40	2,000	100	150	1 25	6,000	7,500 00
Berrien	825	1,683	345	240	2 00	256,172	512,344 00
Bibb	20	10,000	50	800	1 50	15,000	32,500 00
Do	20	1,200	50	100	1 40	1,000	1,400 00
Brooks	50		10		1 25		
Campbell	20	900	65	100	2 00		
Carroll	25	4,800	100	100	1 00	1,625	1,625 00
Chatham	20	2,000	70	240	1 50	3,360	5,040 00
Colquitt	10	700	25	50	4 00	125	500 00
Decatur	75	700	80	50	5 00	3,000	1,500 00
Dooley	5	1,000	20	40	1 00	40	40 00
Early	50		50	25	2 00	625	1,250 00
Elbert	5	4,000	10	200	2 00	100	200 00

Table showing the production of grapes and yield of wine in the United States by counties—Continued.  
 GEORGIA—Continued.

Counties.	Acres in vines.	Yield of grapes per acre.	Proportion of grape making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Gallons.	Total average wine production.	Total average value of wine crop.
Fulton	200	Pounds.	Per cent.	Gallons.							
Do.	5,000	5,000	7	300	\$1 00	4,200	\$4,200 00	200	4,200	4,500	\$4,500 00
Habersham	200	5,000	8	300	1 00	4,800	4,800 00	7½	4,800	562	802 00
Do.	10	5,500	25	400	1 60	1,000	1,000 00		1,000		
Do.	5		25	100	1 00	125	125 00		125		
Henry	30	1,500	50	200	1 50	4,500	6,750 00	30	4,500	4,500	6,750 00
Houston	120	3,000	25	550	1 25	16,500	20,625 00	85	16,500	12,000	14,062 00
Do.	500	500	75	200	1 00	7,500	7,500 00		7,500		
Jackson	85	500	5	60	1 50	255	310 00	85	255	255	310 00
Lee	5		85		50			5			
Lowndes	100	5,000	90	360	1 25	27,000	33,750 00	100	27,000	27,000	33,750 00
Macon	52		20	300	2 50	3,120	7,800 00	52	3,120	3,120	7,800 00
Marion	4	600	85	600	1 00	2,040	2,040 00	4	2,040	2,040	2,040 00
Monroe	50	2,000	25	100	2 00	1,250	2,500 00		1,250	3,048	6,701 00
Do.	75	2,000	37	175	2 25	4,846	10,963 50		4,846		
Pierce	6							6			
Pike	150	2,000	10	200	1 50	3,000	4,500 00	150	3,000	3,000	4,500 00
Quitman	20	12,000	80	350	1 00	5,700	5,700 00	20	5,700	5,700	5,700 00
Randolph	500	12,000	100	1,000	1 00	500,000	500,000 00		500,000	500,000	500,000 00
Do.	500	12,000	100	1,000	1 00	500,000	500,000 00		500,000	500,000	500,000 00
Schley	25	10,000	20	400	2 00	2,000	4,000 00		2,000		
Do.	10	2,000	75	500	1 00	3,750	5,625 00	17½	3,750	2,875	4,812 00
Scriven	300	50	50	300	4 00	45,000	180,000 00	300	45,000	45,000	180,000 00
Spaulding	27	5,000	20	400	2 00	2,160	4,320 00	27	2,160	2,160	4,320 00
Talbot	10		33	250	1 50	8,250	12,375 00	10	8,250	8,250	12,375 00
Trump	125		10		2 00			125			
Ware	45		25		1 10			45			
Total								2,991½	903,244	1,335,521 62	



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ILLINOIS.

Adams	100	4,000	65	400	30	26,000	7,800 00	87	19,250	10,429 00
Do	60	8,000	75	550		24,750	21,057 50			
Do	100	3,000	35	200		7,000	2,450 00			
Bond	15	5,000	66	400	75	4,000	3,000 00	22½	2,999	2,209 20
Do	30	2,000	33½	200	80	1,998	1,598 40			
Boone	10	4,000						10		
Calhoun	8	1,600	40	100	40	349	1,396 00	8	349	1,396 00
Carroll	15	10,000						15		2,160 00
Cass	30	9,000	20	600	60	3,600	2,160 00	30	3,600	4,885 00
Champaign	120	3,000	1	250	1 00	6,990	13,980 00	51	3,122	3,093 00
Do	15	7,000	10	466	2 00	6,990	2,310 00			
Do	28	1,000	10	66	1 25	1,848	3,920 00			
Do	40	4,000	20	400	60	3,200	6,187	170	6,187	3,093 00
Christian	170	2,000	33	125	50	3,900	4,875 00			
Clark	13	6,000	75	500	1 25	3,900	4,200 00	13	3,900	4,875 00
Clinton	168	7,000	25	500	2 00	21,000	42,000 00	109	11,062	21,337 00
Do	50	350	75	30	60	1,125	6,250 00			
Coles	100	3,000	25	250	75	6,250	18,000 00	41	6,625	11,015 00
Do	30	4,000	50	600	2 00	9,000	21,000 00			
Do	30	200	25	700	50	750	2,812 50			
Cumberland	25	300	50	150	1 50	1,875	2,812 50	25	1,875	2,812 50
De Kalb	15	300	25	20	1 75	75	131 25	15	131 25	450 00
De Witt	8	3,300	25	225	1 00	450	2,500 00	8	450	450 00
Du Page	20	1,907	50	400	2 25		2,500 00	20	2,000	2,500 00
Edgar	10	5,000	100	1,000	1 25	2,000	25,000 00	77½	12,940	13,160 00
Eaton	100	4,000	25	1,500	1 00	25,000	1,320 00			
Do	55	2,000	10	160	75	3,750	2,812 50	15	3,750	2,812 50
Greene	15	5,000	50	500	2 00	2,000	4,000 00	12	1,040	2,050 00
Grundy	20	4,000	50	200	1 25	80	100 00			
Do	4	3,000	10	200	1 00	300	150,000 00	696½	203,469	97,594 14
Hancock	1,000	7,000	75	400	37½	68,600	25,725 00			
Do	700	7,000	98	585	45	15,187	6,834 15			
Do	450	6,000	75	450	45	135,000	60,750 00	32	2,000	1,500 00
Do	450	4,500	80	375	40	281,000	112,400 00			
Do	30	2,300	75	1,000	50	472,500	226,250 00			
Do	1,500	4,000	95	350	60	152,000	91,200 00	87½	1,000	1,500 00
Do	32	4,850	50	400	75	2,000	1,500 00			
Henderson	100	3,000	5	200	1 50	1,000	1,500 00	50	1,000	1,000 00
Iroquois	75	2,000			1 00	1,000	1,000 00	55	10,443	4,177 00
Jackson	50	5,000	50	400	40	19,950	7,375 00	150	81,250	78,125 00
Jefferson	60	5,000	95	350	50	937	150,000 00			
Do	50	4,000	75	250	1 00	150,000	6,250 00	27½	1,150	987 00
Jo Daviess	200	10,000	50	50	50	12,500	1,650 00			
Do	100	6,500	25	65	1 00	1,650	1,650 00			
Kankakee	50	1,000	50	100	50	1,650	1,650 00			
Do	5	2,000	100	130	50	1,650	1,650 00			

Table showing the production of grapes and yield of wine in the United States by counties—Continued.  
ILLINOIS—Continued.

Counties.	Acres in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Total average wine production.	Total average value of wine crop.
						Gallons.	Gallons.			
La Salle.....	45	7,000	15	465	\$0 50	3,138	\$1,569 00	45	3,138	\$1,569 00
Lee.....	13	10,000	10	666	1 50	3,865	1,392 00	13	3,865	1,392 00
Livingston.....	30	7,000	20	300	2 00	6,000	12,000 00	65	6,000	12,000 00
Do.....	100	5,000	50	500	75	1,500	1,125 00			
Logan.....	6	7,000	50	500	1 75	2,240	3,920 00			
Do.....	14	4,600	16	1,000	1 75	5,287	3,984 25	10	1,870	2,522 00
Macon.....	50	5,500	25	423	75	100,000	60,000 00	50	5,287	3,984 25
Madison.....	500	5,000	50	400	60	5,000	4,000 00			
Do.....	250	7,000	50	400	80	32,250	16,625 00			
Do.....	70	7,000	95	500	2 03	2,700	5,400 00	208½	34,987	21,506 00
Do.....	15	2,500	90	200						
Marion.....	5	7,000	25	450	50	3,837	1,918 50	5	3,837	1,918 50
Marshall.....	35	7,000	50	500	25	4,000	1,000 00	35	3,837	1,918 50
Mason.....	16	5,000	50	500	35	9,000	3,150 00	23	6,500	2,075 09
Do.....	30	7,200	50	600				87		
Mercer.....	24	19,200	4							
Do.....	150	7,000								
McDonough.....	25	5,700	75	500	60	3,375	5,625 00	22½	6,062	3,500 00
Do.....	20	4,000	50	275	50	2,750	1,375 00			
Do.....	27	4,000	25	300	1 00	1,350	1,350 00	23½	900	900 00
McHenry.....	20	6,000	33	300		450				
Do.....	45	4,000	33	250	95	3,750	3,562 50			
McLean.....	45	4,000	33	250	1 30	3,750	5,625 00	40	2,860	3,350 00
Do.....	30	2,500	18	200	80	1,080	864 00			
Monroe.....	110	7,000	1	600	90	860	954 00	110	660	954 00
Montgomery.....	10	500	33	200	75	2,640	1,980 00	40	2,640	1,980 00
Morgan.....	250	1,200	50	800	75	100,000	75,000 00			
Do.....	250	3,000	50	210	1 00	26,250	26,250 00	250	63,125	50,625 00
Ogle.....	25	1,000						25		
Perry.....	50	6,000	25	1,000	1 00	125,000	125,000 00			
Do.....	50	6,000	50	1,400	1 00	10,000	10,000 00	50	67,500	67,500 00
Piatt.....	4	30,000	50	1,000	2 00	2,000	4,000 00	4	2,000	4,000 00
Poplar.....	23	2,600	80	1,130	50	2,760	1,380 00			
Do.....	18	3,000	3	225	75	1,215	911 00	20½	1,987	763 00
Pulaski.....	40	3,000						32½		

Pulaski.....	25	6,500	80	200	1 00	6,640	6,640 00	42½	8,307	5,905 00
Randolph.....	44½	3,000	75	464	60	15,132	9,187 20	}	3,600	2,160 00
Do.....	44	6,500	75	500	60	3,150	1,890 00			1,890 00
Richland.....	42	7,000	75	240	60	3,600	2,160 00	20	3,150	1,890 00
Rock Island.....	20	4,000	75	500	60	3,150	1,890 00	41	116,250	85,687 00
Do.....	42	7,000	75	500	35	7,500	2,625 00	}	200	168,750 00
Saint Clair.....	200	7,000	75	1,500	75	225,000	3,240 00			
Do.....	200	3,000	75	108	1 50	2,160	3,240 00	40	2,160	3,240 00
Saline.....	40	1,510	50	108	1 50	2,160	3,240 00	40	2,160	3,240 00
Saugamon.....	40	2,000	75	1,500	75	225,000	168,750 00	3	225,000	168,750 00
Scott.....	3	3,000	75	400	1 25	2,400	6,000 00	15	2,400	6,000 00
Shelby.....	13	6,000	40	100	75	5,000	3,750 00	100	3,000	3,750 00
Stark.....	100	4,000	50	250	2 00	1,000	2,000 00	9	1,000	2,000 00
Tazewell.....	5	2,500	50	108	60	1,512	9,072 00	}	8½	5,209 00
Union.....	8	3,412	90	330	55	2,450	1,347 50			
Vermilion.....	10	2,352	100	400	2 00	10,000	20,000 00	100	10,000	20,000 00
Do.....	10	8,000	25	400	75	61,425	46,068 00	17½	7,560	6,822 00
Wabash.....	7	4,000	70	1,200	90	7,560	6,822 00	9	61,912	47,434 00
Do.....	100	10,660	90	390	75	62,400	48,800 00	152½	1,047,875	809,547 20
Washington.....	25	8,000	80	600	75	62,400	48,800 00	3,810		
Whitesides.....	10½	12,000								
Will.....	175	8,000								
Woodford.....	130									
Do.....										
Total.....										

IOWA.

Adair.....	68	6,000	6	400	1 00	1,632	1,632 00	68	1,632	1,632 00
Adams.....	40	6,000	50	400	2 00	600	1,200 00	40	600	1,200 00
Alaapeake.....	10	6,000	15	1,000	1 25	1,250	1,562 50	10	1,250	1,562 50
Black Hawk.....	25	4,000	25	500	2 50	500	1,250 00	25	500	1,250 00
Buchanan.....	5	2,000						5		
Do.....	5	2,000								
Calhoun.....	2	1,200	50	500	2 50	500	1,250 00	2	500	1,250 00
Carroll.....	25	6,000						25		
Cass.....	100	5,000	10	250	1 00	2,500	2,500 00	100	2,500	2,500 00
Clayton.....	11	3,000	60	300	1 80	1,980	1,984 00	11	1,980	1,984 00
Clinton.....	53	7,000						53		
Crawford.....	8	2,000						8		
Dallas.....	120	6,000	5	400	2 00	2,400	2,400 00	80	1,600	1,600 00
Do.....	40	2,000	2	100	1 00	800	800 00	}	600	360 00
Davis.....	3	3,000	100	200	60	600	360 00			
Decatur.....	576	10,000	10	300	3,808	1,954 00	1,954 00	305	2,500	1,951 00
Do.....	35	3,000	10	375	1 50	1,312	1,908 00			





Mills.....	121	2,600	30	200	60	726	435 60	121	976	595 60
Monroe.....	25	2,000	10	100	.....	250	.....	25	.....	.....
Monroe.....	52	500	.....	.....	.....	.....	.....	52	.....	.....
Montgomery.....	50	.....	.....	.....	.....	.....	.....	50	.....	.....
Muscatine.....	30	10,000	50	685	85	10,275	8,705 75	190	7,937	11,505 75
Do.....	350	1,000	16	100	50	3,600	2,800 00	250	6,650	13,300 00
Page.....	250	4,000	10	300	2 00	6,650	13,300 00	40	.....	.....
Palo Alto.....	40	.....	5	.....	2 00	.....	.....	.....	.....	.....
Do.....	40	900	5	60	1 50	480	720 00	.....	.....	.....
Polk.....	125	6,000	5	350	1 25	2,187	2,853 00	.....	.....	.....
Do.....	400	2,000	12	133	75	6,398	4,798 50	241	3,528	3,610 50
Pottawatomie.....	200	6,000	2	500	1 00	2,000	2,000 00	.....	.....	.....
Do.....	55	5,000	25	380	50	5,225	2,612 50	76	7,612	6,306 25
Do.....	75	5,000	.....	.....	.....	.....	.....	.....	.....	.....
Do.....	100	4,000	10	1,000	1 00	10,000	10,000 00	100	.....	.....
Poweshiek.....	100	6,000	50	400	1 00	25,000	25,000 00	.....	.....	.....
Scott.....	4	4,200	.....	.....	.....	.....	.....	.....	.....	.....
Do.....	350	4,000	30	400	50	26,250	13,125 00	146	16,950	8,475 00
Do.....	85	3,000	60	150	50	7,650	3,825 00	.....	.....	.....
Story.....	200	2,000	1	100	2 25	7,200	4,500 00	.....	.....	.....
Do.....	40	2,000	20	166	1 00	1,328	1,328 00	67	698	761 00
Do.....	10	15,000	10	1,000	1 00	1,000	1,000 00	.....	.....	.....
Do.....	20	2,000	10	.....	1 00	266	266 00	.....	.....	.....
Taylor.....	10	6,000	20	400	75	800	600 00	30	566	466 00
Do.....	50	10,000	1	.....	1 00	333	333 00	.....	.....	.....
Van Buren.....	5	8,700	50	275	75	687	495 25	.....	.....	.....
Do.....	150	1,800	66	150	1 50	4,500	6,750 00	77	2,593	3,622 00
Warren.....	20	14,000	8	600	1 00	960	960 00	20	960	960 00
Wayne.....	10	7,500	75	375	1 00	2,812	2,812 00	.....	.....	.....
Do.....	10	7,500	75	375	1 00	2,812	2,812 00	.....	.....	.....
Do.....	10	1,500	33	1,500	1 00	43,500	43,500 00	50	18,668	18,179 00
Do.....	170	3,200	20	575	90	19,350	17,355 00	.....	.....	.....
Webster.....	10	700	50	46	.....	230	.....	10	230	.....
Total.....	.....	.....	.....	.....	.....	.....	.....	3,851	384,970	346,398 60

\*20 pounds per gallon.

INDIANA.

Adams.....	10	500	25	83	75	207	155 25	10	207	155 25
Clark.....	100	2,000	15	450	50	6,750	3,375 00	70	4,175	2,287 00
Do.....	50	.....	50	400	75	1,600	1,200 00	.....	.....	.....
Clay.....	40	1,000	30	120	2 00	1,800	3,600 00	50	1,600	3,600 00
Clinton.....	10	20,000	20	1,000	1 75	2,000	3,500 00	4	400	3,500 00
Decatur.....	4	1,500	50	200	1 25	2,400	500 00	.....	.....	.....
Dubois.....	30	2,000	90	300	50	8,100	4,050 00	30	8,100	4,050 00
Elkhart.....	473	2,000	5	140	1 00	3,311	3,311 00	473	3,311	3,311 00
Floyd.....	5	1,500	50	900	1 00	2,250	2,250 00	5	2,250	2,250 00

Table showing the production of grapes and yield of wine in the United States by counties—Continued.  
INDIANA—Continued.

Counties.	Acres in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine produced.	Total value of wine crop.	Total average acre-age in vines.	Total average wine production.	Total average value of wine crop.
		Pounds.	Per cent.	Gallons.		Gallons.		Acres.	Gallons.	
Franklin.....	10	4,000	60	700	\$0 75	4,200	\$3,150 00	10	4,025	\$3,500 00
Do.....	10	3,000	75	500	1 00	3,850	3,850 00	10	10	800 00
Gibson.....	10	6,000	20	400	1 00	3,800	3,800 00	10	10	1,500 00
Grant.....	16	6,000	20	400	1 50	1,040	1,560 00	16	1,040	1,875 00
Greene.....	10	100	75	250	1 00	875	875 00	10	1,875	1,765 10
Hamilton.....	20	2,000	57	133	1 00	2,660	2,660 00	30	1,765	4,770 00
Do.....	40	1,000	33	66	1 00	871	871 00	7	5,130	
Harrison.....	10	8,000	99	400	1 00	3,690	3,690 00	8	2,000	1,000 00
Do.....	4	6,500	90	400	75	1,440	1,080 00	12	1,531	1,224 80
Henry.....	25	3,000	50	200	50	2,000	1,000 00	35	2,687	2,687 00
Howard.....	20	3,000	25	175	80	1,531	1,924 80	87	1,000	1,000 00
Jackson.....	4	2,000	50	75	1 00	3,500	3,500 00	10	1,810	1,810 00
Do.....	35	2,000	20	140	1 00	1,000	1,000 00	53	336	856 00
Jefferson.....	50	300	20	200	1 00	2,000	2,000 00	23	969	1,938 00
Knox.....	50	2,000	1	100	1 00	1,620	1,620 00	25	60	240 00
Do.....	150	15,000	10	600	1 00	2,000	2,000 00	10	400	200 00
Kosciusko.....	25	2,000	25	200	2 25	336	856 00	72	10,775	7,731 25
Do.....	10	2,500	10	200	2 00	969	1,938 00	15	4,671	7,006 10
Madison.....	100	2,500	25	600	1 00	1,620	1,620 00	27	1,200	1,200 00
Marion.....	11	9,000	10	200	2 00	71	142 00	11	71	142 00
Do.....	28	3,500	25	600	1 00	1,428	1,428 00	41	1,428	1,428 00
Marshall.....	42	1,500	25	170	4 00	60	240 00	20	520	520 00
Morgan.....	23	1,500	25	200	50	400	200 00	10	400	200 00
Newton.....	25	2,000	25	200	75	18,750	14,062 50	72	10,775	7,731 25
Owen.....	10	4,000	75	200	50	2,800	1,400 00	15	4,671	7,006 10
Perry.....	125	4,000	90	346	1 50	4,671	7,006 10	27	1,200	1,200 00
Pike.....	15	4,700	10	300	1 00	1,200	1,200 00	27	1,200	1,200 00
Porter.....	15	4,000	10	300	2 00	71	142 00	11	71	142 00
Do.....	11	7,000	25	140	1 00	1,428	1,428 00	41	1,428	1,428 00
Putnam.....	25	800	10	200	1 00	5,000	7,500 00	20	520	520 00
Randolph.....	20	3,000	50	1,000	1 50	1,500	1,500 00	10	5,000	7,500 00
Seabury.....	10	1,400	50	1,000	1 50	1,500	1,500 00	10	5,000	7,500 00
Sullivan.....	10	1,400	50	1,000	1 50	1,500	1,500 00	10	5,000	7,500 00

Switzerland.....	10	1,800	55	160	1 50	880	1,320 00	880	1,320 00
Vigo.....	125	4,000	60	300	50	22,500	11,250 00		
Do.....	70	7,500	80	500	50	28,000	11,250 00	114	25,650
Do.....	60	.....	40	.....	1 50	.....	.....		
Do.....	200	3,000	65	160	1 25	20,800	26,000 00		
Do.....	40	4,800	50	140	1 25	2,100	3,200 00	35	1,600
Do.....	30	500	50	.....	.....	.....	2,910 00		
Total.....	.....	.....	.....	.....	.....	.....	.....	1,470	99,566
									91,719 40

GR

KANSAS.

Allen.....	50	2,000	1	120	1 50	18	27	32½	18	27
Do.....	15	1,200	75	150	1 00	23,275	23,275 00	206	23,275	27
Atchinson.....	206	2,000	.....	.....	.....	.....	.....	12	360	468 00
Brown.....	20	5,000	20	150	1 30	360	468 00	35½	3,844	3,844 00
Butler.....	12	1,200	.....	.....	1 50	3,844	3,844 00	70	580	860 00
Chautauqua.....	34	2,400	65	160	1 00	860	720 00	195	8,775	10,968 00
Do.....	37	6,000	1	400	2 00	800	1,000 00	30	1,064	1,489 00
Cherokee.....	90	1,000	20	80	1 25	8,775	10,968 00	201	.....	.....
Do.....	50	1,000	25	180	1 25	.....	.....	7	.....	.....
Cloud.....	195	2,700	.....	.....	1 40	1,064	1,489 60	126	.....	.....
Cowley.....	30	4,000	10	266	.....	.....	.....	428	135,973	89,653 00
Crawford.....	40	4,000	.....	.....	.....	.....	.....	150	1,995	.....
Do.....	362	1,000	.....	.....	.....	.....	.....	30	.....	.....
Davis.....	7	.....	.....	.....	.....	.....	.....	75	4,000	6,000 00
Dickinson.....	126	4,500	60	340	75	118,320	88,740 00	10	300	300 00
Doniphan.....	580	5,000	50	500	50	112,500	56,250 00	20	1,165	1,697 50
Do.....	450	5,000	70	1,000	70	177,100	123,970 00	35	.....	.....
Do.....	253	13,670	5	266	.....	1,995	.....	150	.....	.....
Elk.....	150	4,000	.....	.....	.....	.....	.....	30	.....	.....
Ellsworth.....	30	1,200	.....	.....	.....	.....	.....	75	.....	.....
Franklin.....	75	6,000	20	2,000	1 50	4,000	6,000 00	10	4,000	6,000 00
Greenwood.....	10	4,500	5	300	1 00	300	300 00	20	300	300 00
Jackson.....	20	4,500	5	606	1 50	1,165	1,697 50	35	1,165	1,697 50
Jefferson.....	35	10,000	8	300	50	622	261 00	256	*4,349	3,218 00
Johnson.....	134½	4,000	300	300	75	10,000	7,500 00	.....	.....	.....
Do.....	500	3,000	10	200	75	2,325	1,893 75	.....	.....	.....
Do.....	134	3,000	7	100	75	9,900	19,800 00	337	5,350	10,500 00
Do.....	300	500	100	33	2 00	800	1,200 00	.....	.....	.....
Labette.....	400	600	10	20	1 50	.....	.....	.....	.....	.....
Do.....	312	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do.....	12	6,500	100	500	60	6,000	3,600 00	.....	.....	.....
Leavenworth.....	12	8,000	13	500	65	12,480	8,112 00	132	8,987	5,608 00
Do.....	192	2,500	25	.....	65	8,483	5,113 95	8	88	88 00
Do.....	192	2,500	20	55	1 00	88	88 00	140	.....	.....
Lincoln.....	8	3,600	.....	.....	.....	.....	.....	.....	.....	.....
Linn.....	65	.....	8	.....	1 50	.....	.....	.....	.....	.....
Do.....	75	3,000	.....	.....	.....	.....	.....	.....	.....	.....
Do.....	75	2,000	.....	.....	.....	.....	.....	.....	.....	.....
Lyon.....	58	.....	.....	.....	.....	.....	.....	58	.....	.....

\* Total given by Reports.

Table showing the production of grapes and yield of wine in the United States by counties—Continued.  
KANSAS—Continued.

Counties.	Acrea in vinea.	Yield of grapea per acre.	Proportion of grape crop uaa in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine produc-tion.	Total value of wine crop.	Total average acre-age in vinea.	Total average wine production.	Total average value of wine crop.
McPherson	56	Pounda.	Per cent.	Gallona.		Gallona.		Acrea.	Gallona.	
Do	6,400	30	360	\$2 00	674	\$1,348 00	382	43		\$760 00
Do	30	200	10	200	2 00	180 00	382	43		
Miami	10	8,000	25	500	50	625 00	1,250	10		625 00
Montgomery	150	5,000			1 00					
Do	139	4,000	5	200	1 25	1,737 50		129		
Do	0	4,000			1 00					
Morris	10	6,000	25	200	1 00	500 00	500	10		500 00
Nemaha	30	6,000			2 00	6,000 00	3,000	30		6,000 00
Neosho	10	1,200	2	80	2 00	186 00	93	58		186 00
Osage	10	12,000						10		
Phillips	15	10,000						15		
Pottawatomie	25	2,000	20	125	1 00	625 00		25		1,121 00
Do	25	10,000	75	625	1 00	11,618				
Reno	15	2,000								
Do	15	2,000								
Do	15	1,600			3 00			15		
Do	18	8,000								
Republic	8	2,000	5	166	2 00	66	132 00			132 00
Do	8	2,000	5	166	2 00	66	132 00		66	
Riley	20	7,000	33	500	1 00	3,300	3,300 00	20		3,300 00
Shawnee	105	1,800	5	102	75	535	401 25	105		401 25
Sedwick	56	1,000				40		56		
Do	56					40				
Do	8,000									
Washington	30	3,500						30		
Do	35	500	1					37		
Do	39									
Wilson	20	2,000	5	166	1 00	166	166 00	20		166 00
Woodson	15	15,000	2	400	1 25					
Do	10	6,000				26,500	19,875 00	12½		
Wyandotte	530	3,000	20	250	75	500	3,000 00			
Do	150	2,400	10	200	1 00	26,640	19,880 00	276		14,285 00
Do	148	5,000	50	360	75					
Total								3,542½	226,249	100,330 75



KENTUCKY.

Boyle.....	75	4,000	70	275	60	14,437	8,662 00	75	14,437	8,662 00
Bullitt.....	80	1,000	20	66	1 00	1,056	1,056 00	80	1,056	1,056 00
Christian.....	55	3,500	70	150	1 25	5,775	7,218 75	55	5,775	7,218 75
Davies.....	25	250						25		
Fayette.....	25	5,000	50	300	60	3,750	2,250 00	25	3,750	2,250 00
Hardin.....	25	2,500	20	240	1 00	1,200 00	1,200 00	25	1,200	1,200 00
Harrison.....	48		16	300	1 00	2,204	2,204 00	48	2,204	2,204 00
Hart.....	10	5,000	60	375	1 50	2,250	1,125 00	10	2,250	1,125 00
Henderson.....	20	5,000	15	320	75	960	720 00	20	960	720 00
Jefferson.....	500	2,000	10	100	1 00	5,000	5,000 00	350	2,600	2,600 00
Do.....	200	2,000	1	100	1 00	5,000	5,000 00			
Kenton.....										
Do.....	300		10		1 00	7,500	7,500 00	300		
Logan.....	200	3,000	75	240	1 00	36,000	36,000 00	150	20,312	20,312 00
Do.....	100	1,000	75		1 00	3,625	3,625 00			
Marion.....	10	4,000	50	300	90	1,500	1,350 00	10	1,500	1,350 00
Mercer.....	20	1,800	33	350	75	2,311	2,913 75			
Do.....	18	2,000	40	400	90	2,880	2,592 00			
Do.....	18	3,000	40	350	80	2,800	1,216 00			
McCracken.....	10	4,500	20	400	1 50	800	1,200 00	10	800	1,200 00
McLean.....	10	2,000		200	1 50			10		
Montgomery.....	12	5,000	30	600	2 50	2,160	5,400 00	11	2,160	5,400 00
Do.....	10		5		1 00					
Nicholas.....	1	2,500	75	220	1 50	165	247 00	1	165	247 00
Ohio.....	10	4,000	50	200	1 00	1,000	1,000 00	500	1,000	1,000 00
Oldham.....	500		50		1 00			15		
Scott.....	15		90	200	2 00	2,700	5,400 00	10	2,700	5,400 00
Simpson.....	10	5,500	10	500	1 50	400	750 00	4	500	750 00
Spencer.....	4			100				5		
Taylor.....			20		2 00			10		
Trimble.....	10	2,000								
Warr.....	60	1,700	75	100	1 00	4,700	4,700 00			
Do.....	55	1,600	80	140	1 20	6,160	7,392 00			
Do.....	56	2,000	80	106	1 00	4,748	4,748 00	21	4,982	5,020 00
Do.....	30	2,200	80	180	1 75	4,390	3,240 00			
Do.....	31	2,000	95	350	1 00	10,307	10,307 00	31	10,307	10,307 00
Washington.....	30		50	200	1 25	3,000	3,750 00	20	2,512	2,887 00
Woodford.....	10	3,000	90	225	1 00	2,025	2,025 00			
Do.....										
Total.....								1,850	81,170	80,908 75

\* Ives seedling.

LOUISIANA.

Webster.....	12				1 00					
Do.....	51				1 50			9		

Table showing the production of grapes and yield of wine in the United States by counties—Continued.

## MAINE.

Counties.	Ares in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Total average wine production.	Total average value of wine crop.
Lincoln.....	50	Pounds. 5,000	Per cent. 6	Gallons. 400	\$2 00	Gallons. 1,200	\$2,400 00	Acres. 50	Gallons. 1,200	\$2,400 00
York.....	40	2,500	.....	.....	.....	.....	.....	21	.....	.....
Do.....	12 $\frac{1}{2}$	2,500	.....	.....	.....	.....	.....	.....	.....	.....
Do.....	10	3,000	5	600	1 50	300	450 00	.....	300	450 00
Total.....	.....	.....	.....	.....	.....	.....	.....	71	1,500	2,850 00

## MARYLAND.

Anne Arundel.....	60	5,000	25	350	75	5,250	3,937 50	60	5,250	3,937 50
Alleghany.....	25	5,000	20	250	50	1,250	625 00	25	1,250	625 00
Caroline.....	75	2,000	50	200	90	7,500	6,750 00	75	7,500	6,750 00
Dorchester.....	100	2,500	1	300	1 25	300	375 00	.....	.....	.....
Do.....	350	3,000	1	200	1 00	700	700 00	225	500	537 00
Harford.....	35	4,000	5	300	1 50	525	787 50	35	525	787 50
Queen Anne.....	200	.....	10	.....	2 00	.....	.....	200	.....	.....
Somerset.....	6	.....	90	350	1 50	1,800	2,835 00	6	1,800	2,835 00
Saint Mary's.....	3	.....	75	40	2 00	90	180 00	3	90	180 00
Washington.....	70	3,000	25	200	1 00	3,500	3,500 00	70	3,500	3,500 00
Total.....	.....	.....	.....	.....	.....	.....	.....	690	21,405	19,151 00

## MASSACHUSETTS.

Barnstable.....	10	.....	.....	.....	.....	.....	.....	10	.....	.....
Bristol.....	10	25,000	.....	.....	.....	.....	.....	7 $\frac{1}{2}$	.....	.....
Do.....	5	6,000	.....	.....	.....	.....	.....	.....	.....	.....
Dukes.....	4	8,000	.....	.....	.....	.....	.....	4	.....	.....

Essex.....	26	3,600	25	125	1 75	625	1,091 75	25	1,112	1,850 25
Do.....	30	4,000	15	325	2 00	1,462	2,924 00			
Do.....	25	5,000	10	500	1 25	1,250	1,562 50			
Hamden.....	6	6,000	5	400	2 00	120	240 00	6	120	240 00
Hampshire.....	50	11,250	10	750	2 00	3,750	7,500 00		2,041	4,082 00
Do.....	50	2,000	5	133		332	664 00	50		
Middlesex.....	45	4,000								
Do.....	30	6,000	5	450	1 25	675	1,033 75			
Do.....	200	6,000	5	500	1 25	500	625 00			
Do.....	139	5,000	5	333		2,314	2,892 50	92	1,097	1,409 25
Do.....	70	5,000	5	333		1,165	1,456 25			
Do.....	70	4,000	5	266		891	1,038 75			
Norfolk.....	25	4,000						25		
Plymouth.....	3	5,000						3		
Worcester.....	35	4,500	15	375	1 25	1,968	2,460 00	55	1,968	2,460
Do.....	80	3,000								
Do.....	50	3,000								
Total.....								227½	6,338	10,050 50

\* Average of other reports for county.

MICHIGAN.

Berrien.....	300	5,000	5	175	2 00	2,625	5,250 00	300	2,625	5,250 00
Do.....	300	2,000								
Calhoun.....	20	6,000	10	3,000	1 00	600	600 00			
Do.....	24	4,000	10	300	1 50	720	1,080 00	22	600	840 00
Cass.....	25		10	280	1 00	700	700 00	25	700	700 00
Easton.....	300	3,000	10	200	2 00	6,000	1,200 00	300	6,000	1,200 00
Ganeseo.....	4	1,500						4		
Grand Traverse.....	7	5,000						8½		
Do.....	10	4,000								
Hillsdale.....	50	4,000						35		
Do.....	20	6,000								
Ingham.....	10	6,500						10		
Do.....	31									
Do.....	15	2,000								
Do.....	41	4,000	10	600	2 00	2,460	4,920 00			
Ionia.....	75	3,000	12½	200	1 25	1,620	2,625 00			
Do.....	40	4,000	3	165	1 50	1,198	297 00	52	1,426	2,414 00
Kalamazoo.....	17	2,000						15½		
Do.....	17	2,000								
Do.....	19	4,000								
Do.....	12	2,000	5	133		332	498 00			
Kent.....	50	2,000	5	666		489	748 00			
Do.....	30	10,000	5	*400		400	600 00			
Do.....	20	6,000	5	*400		750	1,125 00	30	495	742 00
Do.....	20	5,000	10	375	1 50					

\* Average for the State.

Table showing the production of grapes and yield of wine in the United States by counties—Continued.

MICHIGAN—Continued.

Counties.	Acre in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine produced.	Total value of wine crop.	Total average acreage in vines.	Total average wine production.	Total average value of wine crop.
		Pounds.	Percent.	Gallons.		Gallons.		Acres.	Gallons.	
Lenawee.....	20	8,000	35	500	\$1 00	3,500	\$3,500 00			
Do.....	40	6,000	10	400	80	1,600	128 00	32½	2,050	\$2,419 00
Do.....	50	8,000	10	500	50	2,500	1,250 00			
Do.....	20	6,000	10	400	60	2,400	1,200 00			
Livingston.....	3	5,000	10	400	2 50	12	4,800 00	3	12	30 00
Mason.....	10	2,000	10	200	3 00	8,000	1,200 00			
Do.....	400	2,500	10	250	1 50	8,000	1,200 00			
Monroe.....	410	4,000	5	426	3 00	5,125	15,375 00	405	6,562	8,287 00
Muskegon.....	500	6,400	10	400	*1 31	25,000	32,750 00	500	25,000	32,750 00
Ottawa.....	250	6,000	3	450	*1 31	10,650	13,951 50	250	10,650	13,951 50
Van Buren.....	175	6,000	2	500	1 40	2,362	3,306 80	175	2,362	3,306 80
Do.....	80	6,000	2	500	1 00	800	800 00			
Do.....	1	6,000	1	1	1 00	240	240 00			
Do.....	40	4,000	5	*300	1 50	450	675 00	50	496	571 00
Washington.....	50	5,000	5	400	80	200	160 00			
Do.....	50	4,000	50	300	62	7,500	4,650 00			
Do.....	25	10,000	10	1,500	1 50	2,250	3,375 00			
Do.....	4,000	8	8	100	1 00	600	600 00	391	3,793	3,156 00
Do.....	50	6,000	20	*400	1 00	4,000	4,000 00			
Do.....	38	2,600	100	216	75	18,208	6,156 00			
Total.....								2,266	62,831	75,617 30

\* Average for the State.

† 216 gallons of juice require 867 pounds of sugar.

MINNESOTA.

Carver.....	10	3,000	50	300	1 00	600	600 00	10	600	600 00
Hennepin.....	25	3,000	5	200	1 25	250	312 50			
Do.....	10	3,000	2	200	2 00	40	80 00	17½	145	196 00
Houston.....	16	3,000	60	200	60	1,920	1,152 00	16	1,920	1,152 00
Ramsey.....	20	2,000	5	160	3 00	166	498 00	20	1,166	498 00
Total.....								63½	2,831	2,446 00

MISSISSIPPI.

Chickasaw.....	11	250	50	50	1 50	275	412 50	11	275	412 50
Clarke.....	25	.....	75	375	1 75	7,030	10,546 50	25	7,030	10,546 50
De Soto.....	5	1,800	25	150	1 50	1,875	3,281 25	5	1,875	3,281 25
Lauderdale.....	15	.....	50	.....	1 50	.....	.....	15	.....	.....
Lawrence.....	2	.....	30	200	1 25	100	125 00	2	100	125 00
Lowndes.....	60	3,500	75	250	1 50	11,250	16,875 00	60	11,250	16,875 00
Marshall.....	100	15,000	10	900	1 00	9,000	9,000 00	100	9,000	9,000 00
Panola.....	1	4,200	.....	.....	.....	.....	.....	1	.....	.....
Scott.....	12	3,000	10	200	75	240	180 00	12	240	180 00
Tishomingo.....	1½	1,100	50	100	1 50	75	112 50	1½	75	112 50
Winston.....	200	15,000	90	1,000	1 50	180,000	270,000 00	200	180,000	270,000 00
Total.....	.....	.....	.....	.....	.....	.....	.....	432	209,845	310,532 75

MISSOURI.

Andrew.....	10	7,000	95	500	70	4,750	3,325 00	70	19,425	12,956 00
Do.....	125	9,000	95	400	70	47,900	33,530 00	.....	.....	.....
Do.....	95	3,000	30	300	40	8,550	3,420 00	.....	.....	.....
Do.....	50	6,000	60	550	70	16,500	11,550 00	.....	.....	.....
Bollinger.....	20	5,000	33	300	1 25	1,980	2,475 00	.....	.....	.....
Do.....	15	3,000	50	200	1 00	1,500	1,500 00	22	1,560	1,458 00
Do.....	10	600	20	100	2 00	200	400 00	.....	.....	.....
Boone.....	54	2,200	40	200	75	4,320	3,240 00	.....	.....	.....
Do.....	20	8,000	10	800	1 00	1,600	1,600 00	37	2,960	2,420 00
Buchanan.....	200	3,000	20	200	50	8,000	4,000 00	.....	.....	.....
Do.....	255	10,000	33	700	75	51,975	38,981 25	.....	.....	.....
Do.....	100	5,000	30	320	50	9,600	4,800 00	.....	.....	.....
Do.....	300	5,000	50	400	50	60,000	20,000 00	.....	.....	.....
Do.....	250	3,000	25	200	75	12,440	9,330 00	.....	.....	.....
Caldwell.....	18	5,200	30	350	75	1,800	1,317 50	.....	.....	.....
Do.....	20	5,000	50	425	1 00	4,250	4,250 00	.....	.....	.....
Do.....	40	5,200	40	375	1 00	7,800	3,000 00	19	2,757	2,521 25
Do.....	18	5,200	30	350	75	1,800	1,317 50	.....	.....	.....
Cape Girardeau.....	50	4,000	75	300	1 75	11,250	11,250 00	50	11,250	11,250 00
Cass.....	800	2,000	50	150	2 00	60,000	120,000 00	415	31,031	60,773 00
Do.....	30	4,000	25	275	75	2,062	1,546 00	.....	.....	.....
Do.....	50	2,000	50	250	1 00	6,250	6,250 00	.....	.....	.....
Clay.....	40	10,000	5	600	1 00	1,200	720 00	85	3,725	3,485 00
Do.....	60	3,000	60	250	1 20	9,000	10,800 00	.....	.....	.....
Do.....	50	1,000	30	300	50	7,500	4,700 00	55	8,250	7,750 00
Cooper.....	130	3,000	75	250	75	24,375	18,281 25	.....	.....	.....
Do.....	200	4,800	90	400	75	72,000	54,000 00	.....	.....	.....
Do.....	150	10,000	75	500	75	56,250	42,187 50	.....	.....	.....
Do.....	200	2,500	75	250	1 00	37,500	37,500 00	256	102,825	95,193 75
Do.....	600	7,000	90	600	1 00	324,000	324,000 00	.....	.....	.....

Table showing the production of grapes and yield of wine in the United States by counties—Continued.  
MISSOURI—Continued.

Counties.	Acre in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Total average wine production.	Total average value of wine crop.
		Pounds.	Percent.	Gallons.	\$	Gallons.	\$	Acres.	Gallons.	
Davies.....	60	6,000	8	450	75	2,160	\$1,620 00	60	2,160	\$1,620 00
Franklin.....	375	6,000	80	166	50	49,800	24,900 00	375	49,800	24,900 00
Gasconade.....	1,750	3,500	100	325	60	568,750	341,250 00			
Do.....	1,750	3,500	100	320	60	560,000	336,000 00			
Do.....	1,650	3,530	100	300	65	496,000	321,750 00	1,562	502,375	317,256 00
Do.....	1,100	6,000	95	350	70	385,750	270,025 00			
Greene.....	10	1,200	10	120	1 25	600	750 00	10	600	750 00
Grundy.....	30	7,500	12	500	50	1,800	900 00	30	1,800	900 00
Henry.....	80	7,500	90	500	1 00	36,000 00	36,000 00	80	36,000	36,000 00
Holt.....	400	20,000	25	1,528	75	152,800	114,600 00	400	152,800	114,600 00
Howell.....	40	7,500	75	*400	1 00	12,000 00	12,000 00	40	12,000	12,000 00
Jackson.....	160	3,554	75	350	1 25	18,000 00	22,500 00	160	18,000	22,500 00
Jefferson.....	270	5,000	75	500	70	7,087	4,960 90			
Do.....	500	5,000	75	500	40	150,000 00	60,000 00			
Do.....	500	8,000	40	600	45	120,000 00	54,000 00			
Do.....	1,400	24,000	75	400	60	420,000 00	252,000 00			
Knox.....	250	13,000	50	1,000	60	125,000 00	75,000 00	250	125,000	75,000 00
Laclede.....	40	1,800	25	450	60	3,000 00	1,800 00			
Lawrence.....	7	5,000	75	500	1 25	87	983 75	7	87	983 75
Lewis.....	25	8,000	75	500	50	93,000 00	69,750 00	17	93,000	69,750 00
Do.....	10	7,500	75	500	50	3,000 00	1,500 00			
Linn.....	150	4,000	4	300	50	4,500	2,250 00			
Do.....	30	4,000	50	300	50	4,500	2,250 00			
Lincoln.....	60	8,000	10	533	1 00	3,198	3,198 00	60	3,198	3,198 00
Livingston.....	90	10,000	75	700	55	45,250	24,887 50	90	45,250	24,887 50
Macon.....	55	10,000	80	100	75	4,400	3,300 00	55	4,400	3,300 00
Mercer.....	500	10,000	25	450	25	56,250	22,500 00			
Do.....	40	12,000	5	310	25	6,400	1,600 00	270	31,325	12,050 00
Miller.....	20	3,200	50	310	90	3,100	2,790 00			
Do.....	50	8,000	15	340	75	2,550	1,912 50	35	2,825	2,351 00
Monteau.....	50	24,000	75	2,000	1 00	75,000 00	75,000 00	50	75,000	75,000 00
Monroe.....	15	4,000	50	200	75	1,500	1,125 00	15	1,500	1,125 00
Montgomery.....	200	1,300	100	200	50	40,000 00	20,000 00	200	40,000	20,000 00
Morgan.....	6	8,000	50	580	50	1,740	870 00	6	1,740	870 00
Newton.....	25	4,000	20	300	1 00	1,500	1,500 00	25	1,500	1,500 00



Nodaway.....	45	.....	75	450	1 25	14 340	17,887 50	351	54,890	56,082 50
Do.....	9	2,000	20	200	1 00	13 360	130,000 00	25	937	468 00
Do.....	1,000	3,000	50	300	1 00	150,000 00	12,393 75	25	16,625	12,393 75
Oregon.....	25	1,000	75	75	50	937	20,250 00	40	13,455	11,775 00
Osage.....	95	1,900	100	175	75	16,625	3,300 00	200	.....	.....
Phelps.....	30	9,000	90	750	1 00	20,250 00	.....	.....	.....	.....
Do.....	50	2,500	66	200	2 00	6,660	.....	.....	.....	.....
Platte.....	200	.....	10	.....	.....	.....	.....	.....	.....	.....
Polk.....	5	5,000	10	450	80	225	648 00	14	810	648 00
Pulaski.....	14	4,750	25	260	1 00	5,000 00	5,000 00	100	5,000	5,000 00
Putnam.....	100	8,000	10	500	1 00	2,500 00	2,500 00	25	2,500	2,500 00
Ray.....	25	3,000	25	400	1 50	93 150	46,575 00	230	93,150	46,575 00
Saint Charles.....	230	6,800	90	450	40	6,000	2,400 00	300	6,000	2,400 00
Sullivan.....	300	2,500	10	200	.....	.....	.....	10	.....	.....
Taney.....	10	2,000	.....	.....	.....	.....	.....	.....	.....	.....
Texas.....	164	1,100	65	110	1 10	1,056	1,161 60	.....	.....	.....
Do.....	20	.....	75	400	2 00	6,000 00	12,000 00	22	3,352	5,887 00
Do.....	30	3,028	50	200	1 50	3,000	4,500 00	100	830	1,245 00
Vernon.....	100	2,500	5	166	1 50	830	1,245 00	.....	.....	.....
Warren.....	15	2,500	100	250	65	3,750	2,437 50	.....	.....	.....
Do.....	50	.....	60	250	1 00	7,500 00	7,500 00	38	5,216	4,979 50
Do.....	25	.....	50	200	1 00	5,000 00	5,000 00	.....	.....	.....
Washington.....	25	2,000	50	180	70	2,250	1,575 00	25	2,250	1,575 00
Wright.....	15	10,000	90	680	1 25	10,098	12,622 50	.....	.....	.....
Do.....	80	8,000	80	1,000	1 50	64,000 00	96,000 00	43	24,825	36,333 50
Do.....	35	2,000	8	135	1 00	378	378 00	.....	.....	.....
Total.....	.....	.....	.....	.....	.....	.....	.....	7,376	1,824,207	1,320,050 40

\* Yield assumed at 400 gallons per acre.

† Sixty acres in wine.

NEBRASKA.

Cass.....	20	8,000	20	*533	2 50	2 132	5,330 00	20	2 132	5,330 00
Douglas.....	50	10,000	.....	.....	.....	.....	.....	50	.....	.....
Franklin.....	15	1,200	.....	.....	.....	.....	.....	15	.....	.....
Lancaster.....	10	2,000	.....	.....	.....	.....	.....	10	.....	.....
Nemaha.....	150	7,000	10	466	1 00	7,000	7,000 00	80	3,535	3,532 00
Do.....	10	14,000	1	700	1 50	70	105 00	40	100	100 00
Sarpy.....	40	4,000	1	250	1 00	100	100 00	40	.....	.....
Sanders.....	40	19,200	.....	.....	.....	.....	.....	25	.....	.....
Washington.....	25	4,500	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	.....	.....	.....	.....	.....	.....	.....	280	5,767	8,982 00

\* Gallons calculated from pounds given.

† Grapes 4 cents per pound.

Table showing the production of grapes and yield of wine in the United States by counties—Continued.  
NEW JERSEY.

Counties.	Acreage in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Total average wine production.	Total average value of wine crop.
		Pounds.	Per cent.	Gallons.		Gallons.		Akers.	Gallons.	\$176,483 00
Atlantic.....	700	5,000	60	400	\$1 00	210,000	\$210,000 00			
Do.....	850	6,000	60	400	1 25	204,000	204,000 00			
Do.....	840	4,000	90	320	1 75	249,480	311,850 00			
Do.....	700	3,000	100	250	1 00	175,000	131,250 00	776	174,975	
Do.....	600	4,000	60	275	1 00	92,000	92,000 00			
Do.....	900	4,500	10	321	1 00	6,420	6,420 00			
Do.....	2,000	3,000	60	200	1 00	240,000	240,000 00			
Do.....	324	3,150	46	1,449	97	215,906	209,428 00	30		
Burlington.....	30	4,200								
Camden.....	50	4,000						150		
Do.....	250	3,000	5	100	75	10,000	7,500 00			
Cumberland.....	300	3,000	20	330	87	23,700	10,671 00			
Do.....	1,200	4,000	6	160	1 00	13,440	13,440 00	855	17,250	18,803 00
Do.....	1,400	4,000	6	160	2 00	21,802	43,604 00			
Do.....	323	2,166	45	150						
Essex.....	10	3,000	1	250	85	1,500	1,275 00	10	1,500	
Hunterdon.....	24	3,000	25	666	1 50	2,497	3,745 50	24	2,497	1,275 00
Monmouth.....	50	8,000	5-10	400	*1 25	18,600	23,250 20	50	18,600	3,745 50
Passaic.....	62	7,000	75	300	1 00	300	300 00	62	300	23,250 20
Somerset.....	10	7,000	10	300	1 00			10		300 00
Total.....								1,967	215,122	223,866 70

\*Two years old, \$2.  
NEW MEXICO.

Bernalillo.....	250	40	50	900	1 50	109,500	164,250 00	250	109,500	164,250 00
Dona Ana.....	800	10,000	25	500	1 00	100,000	100,000 00	800	100,000	100,000 00
Socorro.....	1,000	10,000	80	400	80	320,000	256,000 00			
Do.....	1,000	9,000	90	500	1 00	450,000	450,000 00	1,000	335,000	335,000 00
Valencia.....	1,100	8,000	66	500	1 00	363,000	363,000 00	1,100	363,000	363,000 00
Total.....								3,150	908,500	980,250 00

\* Barrels.

NEW YORK.

Cayuga.....	30	3,000	200	75	600	450 00	39	790	592 00
Do.....	49	6,000	10	200	75	735 00			
Chautauqua.....	500	3,500	10	300	50	980			
Do.....	1,000	6,000	30	450	75	15,000	1,000	65,500	41,937 00
Do.....	1,500	7,000	2	400	75	135,000			
Do.....	1,000	6,000	20	500	75	12,000			
Columbia.....	250	5,000	5	1,650	35	100,000	250	20,625	4,218 75
Jefferson.....	50	3,000	50	400	100	20,625			
Livingston.....	75	3,000	50	175	75	6,562			
Do.....	75	3,000	50	175	75	6,562	75	6,562	4,921 50
Madison.....	125	4,000	5	308	100	1,000 00	50	1,000	1,000 00
Monroe.....	300	2,000	15	125	50	8,625			
Do.....	200	4,000	25	250	100	3,750	163	7,371	7,323 00
Do.....	150	2,500	15	180	200	12,500			
Montgomery.....	20	1,500	20	400	100	3,610	20		
Niagara.....	200	3,000	20	350	100	16,000			
Do.....	150	4,000	5	300	100	5,250	200	8,833	
Do.....	250	3,000	10	300	400	3,750			
Oneida.....	8	3,000	10	300	300	450	9	285	915 00
Do.....	10	4,000							
Ontario.....	1,000	3,500	2	225-250	75	4,750			
Do.....	510	3,000	10	250	40	1,275	836	3,508	
Do.....	1,000	3,500	15	300	50	4,500			
Orleans.....	15	4,000		400	100	6,000			
Do.....	15	3,000					20	6,000	6,000 00
Do.....	57	2,000							
Oswego.....	25	4,000	8	200	200	150	25	150	300 00
Richmond.....	20	4,000	2	266	150	106	20		
Rockland.....	25	1,500			150		25		
Schuyler.....	1,000	4,000					630		
Do.....	200	2,000							
Schoharie.....	11	7,000	2	450	200	90			
Do.....	11	6,500	8	500	150	165	10	118	200 83
Do.....	30	7,500	2	500	100	100			
Seneca.....	30	5,000					30		
Staten.....	7,000	4,000	33	300	200	30,000			
Do.....	3,000	3,000	30	240	40	216,000			
Do.....	4,000	4,000	20	250	60	200,000			
Do.....	5,000	4,000	33	266	40	443,215	5,000	418,202	266,507 00
Do.....	7,000	2,500	80	200	75	1,988,000			
Do.....	4,000	2,500	40	208	45	357,000			
Sullivan.....	5	20,000	10	250	125	125	5	125	156 25
Tompkins.....	25	2,500					25		
Ulster.....	5,500	4,000	1-5	250	150	34,375			
Do.....	4,000	6,000	1	500	20,000	52,562 50	3,706	27,187	52,562 50
Do.....	1,620	5,000							

\*All grapes are sold for table consumption.

Table showing the production of grapes and yield of wine in the United States by counties—Continued.

## NEW YORK—Continued.

Counties.	Acres in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Gallons.	Total average value of wine crop.
Washington.....	10	Pounds. 4,000	Per cent. 25	300	\$3 00	1,500	\$4,500 00	10	.....	.....
Wayne.....	20	4,000	25	666	.....	2,664	.....	.....	.....	.....
Do.....	20	10,000	66	230	1 30	2,760	3,588 00	19	2,308	.....
Do.....	18	3,000	6	300	1 50	450	675 00	25	450	\$675 00
Westchester.....	15	4,000	25	200	75	50,000	37,500 00	15	.....	.....
Wyoming.....	100	5,000	12½	333	75	4,162	3,121 50	410	18,634	.....
Yates.....	131	4,000	5	266	75	1,742	1,306 50	.....	.....	.....
Do.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	.....	.....	.....	.....	.....	.....	.....	12,646	584,148	387,308 83

## NORTH CAROLINA.

Anson.....	25	8,000	75	200	1 00	3,750	3,750 00	25	3,750	3,750 00
Beaufort.....	40	5,000	50	240	1 00	4,800	4,800 00	40	4,800	4,800 00
Bertie.....	20	.....	.....	.....	.....	.....	.....	20	.....	.....
Camden.....	3	7,500	30	450	50	17,500	.....	3	17,500	.....
Carteret.....	500	3,000	50	300	1 20	1,500	1,800 00	500	1,500	.....
Catawba.....	10	3,500	50	70	1 20	1,40	80 00	10	1,400	80 00
Cherokee.....	5	1,200	10	125	75	1,875	1,406 25	300	1,875	1,406 25
Chowan.....	300	3,000	5	200	80	6,600	5,280 00	300	5,280	.....
Craven.....	100	3,000	33	200	1 00	9,600	9,600 00	150	8,100	7,440 00
Crawford.....	200	6,000	12	400	1 00	45,675	45,675 00	295	.....	.....
Cumberland.....	300	4,200	75	210	1 00	120,000	.....	.....	.....	.....
Do.....	300	.....	50	800	.....	.....	.....	.....	.....	.....
Davie.....	20	4,000	50	300	90	3,000	2,700 00	20	3,000	2,700 00
Duplin.....	300	2,000	20	300	1 50	18,000	27,000 00	300	18,000	27,000 00
Edgecombe.....	200	2,000	10	245	1 00	4,900	4,900 00	200	4,900	4,900 00
Forsyth.....	25	2,000	66½	1,666	1 25	2,765	3,456 00	25	2,765	3,456 00
Gaston.....	10	.....	20	90	1 50	180	350 00	10	180	270 00

Granville	75	4,000	75	275	75	15,468	11,601 00	38	15,468	11,601 00
Do.	25	400	5		80					
Do.	15				1 00					
Halifax	75	3,000	100	300	75	22,500	16,875 00	*75	22,500	16,875 00
Harnett	50	10,000	2	400	50	2,000	1,000 00	50	2,000	1,000 00
Haywood	10	4,000	2	266	2 00	53	106	10	53	106 00
Jackson	3	2,000	1½	150	1 50			3		
Lincoln	10				1 25			10		
Montgomery	15							15		
Nash	45	2,000	80	500	1 00	1,800	1,800 00	45	1,800	1,800 00
Nash	35	6,000	50	300	1 00	5,250	5,250 00	35	5,250	5,250 00
New Haven	200	20,000	32½	2,700	1 75	179,820	134,865 00	200	179,820	134,865 00
Pender	75		3		1 00			75		
Perquimans	20		50	700	2 00			20		
Pitt.	40	2,800	80	700	75	22,400	16,900 00	40	22,400	16,900 00
Richmond	100		50	500	1 00	25,000	25,000 00	100	25,000	25,000 00
Rowan			50		85			20		
Wilkes	20	25		150						
Total								2,639	334,701	268,819 25

\*Scuppermong, four-fifths; Concord, one-fifth.

OHIO.

Adams	225	{ 1,500 to 5,000 }	25	400	80	22,480	17,984 00	225	22,480	17,984 00
Allen	50	625	10	75	1 50	375	562 50	35½		
Ashland	100	500	5		75	114	123 75	100	165	123 75
Athens	7	1,628	5	*33		165		7		
Belmont	206	1,388								
Do.	156	219 518			75					
Do.	229	3,000		140				197	18,000	14,400 00
Brown	118	1,500		200	80	18,000	14,400 00			
Brown	185	1,500	50	185	60	17,264	10,358 40	118	17,264	10,358 40
Butler	44	2,000	50	150	50	3,300	1,650 00	44	3,300	1,650 00
Champaign	28	3,300	15	135	1 82	819	1,480 58	28	819	1,480 58
Clinton	14	1,650	15	40	1 25	84	105 00		367	458 25
Do.	26	3,000	25	100	1 25	650	812 50	20		
Columbiana	300	2,000	15	150	65	6,750	4,387 50	300	6,750	4,387 50
Cuyahoga	4,000	3,500	66	300	75	792,000	594,000 00		411,000	303,250 00
Do.	1,500	2,700	10	200	75	30,000	22,500 00	2,750		
Darke	5	4,000	10	266	1 00	133	133 00	5	133	133 00
Delaware	10	2,000	10	133	1 00	133	133 00	10	133	133 00
Erie	1,300	1,800	75	150	1 00	146,250	146,250 00			
Do.	1,315				60	1344,336	206,591 00			
Do.	1,600	{ 2,000 to 3,000 }	66.6	±500	±71	498,000	310,980 00	1,405	309,528	663,821 00

\* Rot destruction.

† Assessor's report.

‡ 225 pure juice, galvanized to 500.

§ Average price.

Table showing the production of grapes and yield of wine in the United States by counties—Continued.

OHIO—Continued.

Counties.	Acres in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Total average wine production.	Total average value of wine crop.
Fairfield	110	Pounds. 1,300	Per cent. 70	Gallons. 100	\$0 70	Gallons. 7,700	\$5,330 00	113	Gallons. 20,250	\$15,745 00
Do	116	6,000	50	600	75	34,800	26,100 00	263	96	172 80
Fulton	263	1,100	5	73	1 80	96	172 80	11		
Geauga	11	4,489					600 00	20	400	600 00
Guernsey	20	1,500	20	100	1 50	400	600 00	15	6,600	600 00
Highland	15	1,800	50	50	1 00	6,600	600 00	24	880	1,760 00
Holmes	24	1,235	33	110	2 00	880	1,760 00	100		
Jefferson	100		20		1 00					
Knox			20			38,100	937 00			
Lake	75	4,000	5	250	1 00	937				
Do	190	5,000		170	1 20	160	7,344 00	105	4,443	8,757 00
Do	120	2,500	3	170						
Do	87	4,000		150	1 25	7,500	9,375 00			
Do	125	2,000	3 5	150	1 25	7,500	9,375 00			
Do	125	2,000	25	250	50	10,000	3,000 00	88	9,400	4,700 00
Lucas	160	3,000	100	530	50	8,800	4,400 00	284	1,290	1,415 00
Do	16	7,000	10	1,000	1 50	500	750 00	275	50,143	37,647 40
Maioning	5	2,500	10	400	1 00	537	74,832 50	50	2,800	2,800 00
Do	52	6,000	33	75	75	99,750	2,800 00	12	2,500	2,750 00
Do	500	4,000	75	266	1 10	2,500	2,750 00	92		
Do	50	400	100	208	2 00			60	2,250	1,350 00
Monroe	92	3,300	10			2,250	1,350 00			
Montgomery	60	1,500	25	150	60	1,350	1,012,500 00	2,867	700,885	488,758 00
Morgan	3,000	6,500	90	500	75	281,250	210,937 50			
Muskingum	4,500	3,500	75	250	75	151,750	258,895 00	73	1,460	876 00
Ottawa	1,767	3,781		50	50	654,510	392,700 00	13		
Do	2,200	5,000	85	350	60	1,460	876 00	123		
Do	73	2,390	10	200	60					
Perry	13	1,905	20			640				
Portage	200	5,000	1							
Richland	160	6,000								
Do	9	4,000	100	320	75	2,880	2,100 00	25	2,880	2,160 00
Salina	25	1,000	2	666		33				



Sandusky.....	50	4,000	20	350	70	3,500	2,450 00	50	3,500	2,450 00
Scioto.....	100	.....	20	.....	1 40	.....	.....	100	.....	.....
Seneca.....	10	4,000	25	300	1 25	666	832 50	10	666	832 50
Shelby.....	15	6,000	60	130	2 00	1 170	2,340 00	15	1,170	2,340 00
Stark.....	36	2,000	5	150	90	270	243 00	36	270	243 00
Tioga.....	20	1,500	33	150	1 25	1 480	1,850 00	33	1,594	1,492 00
Tukey.....	45	1,100	33	115	1 25	1 708	2,125 00	37	7,500	15,000 00
Union.....	20	10,000	50	750	2 00	7 500	15,000 00	20	4,000	8,000 00
Van Wert.....	200	4,400	20	100	2 00	4 000	8,000 00	200	2,080	3,120 00
Warren.....	26	2,600	40	200	1 50	2 080	3,120 00	26	190	380 00
Wayne.....	22	2,600	5	173	2 00	11 420	4,568 00	22	11,420	4,568 00
Washington.....	16	.....	90	800	50	.....	.....	16	.....	.....
Do.....	9	1,300	.....	.....	50	1,217	730 20	9	1,217	730 20
Wood.....	32 to 75	3,140	15	250	60	250	500 00	15	250	500 00
Wyandot.....	25	5,000	5	200	2 00	.....	.....	25	.....	.....
Total.....	.....	.....	.....	.....	.....	.....	.....	9,973	1,632,073	1,627,926 88

\*Local. Lenk Wine Company made 400,000 gallons.

†Auditor's report.

OREGON.

Clackamas.....	16	3,000	35	250	1 00	1,400	1,400 00	16	1,400	1,400 00
Jackson.....	100	3,600	50	300	50	15,000	7,500 00	100	15,000	7,500 00
Marion.....	10	7,500	10	500	68	500	340 00	10	500	340 00
Total.....	.....	.....	.....	.....	.....	.....	.....	126	16,900	9,240 00

PENNSYLVANIA.

Adams.....	13	3,000	12	225	1 00	351	351 00	13	351	351 00
Allegheny.....	150	3,000	90	333	80	44,955	35,964 00	78	22,827	18,262 00
Do.....	.....	3,600	90	300	80	.....	.....	.....	.....	.....
Do.....	7	1,750	100	100	1 50	700	560 00	500	.....	.....
Armstrong.....	500	3,000	.....	.....	.....	.....	.....	.....	.....	.....
Blair.....	32	2,400	25	170	60	1,360	816 00	61	1,205	933 00
Do.....	30	6,000	10	350	1 00	1,050 00	1,050 00	9	1,350	1,012 50
Bradford.....	9	6,000	60	250	75	1,350	1,012 50	7	4,650	3,487 50
Bucks.....	7 3/4	8,000	100	620	2 00	4,650	3,487 50	25	.....	.....
Butler.....	25	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cameron.....	8	1,500	10	100	2 00	80	160 00	8	80	160 00
Cambria.....	50	4,000	25	266	1 00	35,450	35,450 00	50	35,450	35,450 00
Clarion.....	2	8,000	.....	.....	.....	.....	.....	2	.....	.....
Clinton.....	10	1,000	50	50	1 00	250	250 00	11	250	250 00
Columbia.....	11	2,700	70	109	1 50	84	125 00	84	.....	.....
Cumberland.....	40	1,600	33	150	1 10	1,980	2,178 00	17	1,347	1,366 00
Do.....	9	3,000	75	196	40	1,323	529 20	.....	.....	.....
Do.....	2	16,000	30	1,230	1 75	738	1,391 56	.....	.....	.....

Table showing the production of grapes and yield of wine in the United States by counties—Continued.  
 PENNSYLVANIA—Continued.

Counties.	Acres in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Gallons.	Total average wine production.	Total average value of wine crop.
Delaware.....	4	5,000	.....	300	.....	.....	.....	4	.....	.....	.....
Erie.....	300	7,000	2	300	.....	1,260	.....	.....	.....	.....	.....
Do.....	210	4,500	.....	300	.....	1,731	.....	.....	.....	.....	.....
Do.....	260	5,000	2	333	.....	6,800	\$5,100 00	259	5,694	5,694	\$8,034 00
Do.....	200	4,000	10	340	.....	12,187	10,968 30	.....	.....	.....	.....
Do.....	325	5,000	10	375	90	3,300	2,475 00	50	3,347	3,347	2,475 00
Fayette.....	50	2,500	33	200	75	4,850	9,700 00	75	4,850	4,850	9,700 00
Franklin.....	75	16,000	50	975	2 00	.....	.....	25	.....	.....	.....
Gilson.....	25	8,000	11	633	1 25	1,772	2,215 00	28	1,772	1,772	2,215 00
Greene.....	28	2,400	40	200	3 00	13,760	31,648 00	172	13,760	13,760	31,648 00
Huntington.....	172	4,500	.....	500	.....	1,000	1,250 00	35	1,000	1,000	1,250 00
Knox.....	35	10,000	10	120	1 25	450	675 00	20	450	450	787 00
Lancaster.....	20	1,200	30	180	2 00	900	1,800 00	12	900	900	1,800 00
Lawrence.....	15	1,500	25	150	2 00	1,600	3,200 00	200	1,600	1,600	3,200 00
Do.....	10	3,000	3	200	2 00	.....	.....	40	.....	.....	.....
Luzerne.....	200	3,200	20	.....	.....	.....	.....	32	.....	.....	.....
Lycoming.....	40	10,000	.....	.....	2 00	.....	.....	.....	.....	.....	.....
Mercer.....	35	3,000	.....	.....	1 50	.....	.....	5	.....	.....	.....
Do.....	35	8,000	25	.....	1 25	.....	.....	5	.....	.....	.....
Monroe.....	5	2,000	85	60	1 25	480	600 00	.....	.....	.....	.....
Northumberland.....	20	1,400	20	120	2 00	2,040	1,530 00	20	1,260	1,260	1,065 00
Do.....	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Schuylkill.....	150	5,000	12	792	75	14,256	10,692 00	3	.....	.....	.....
Washington.....	75	6,000	20	500	1 00	7,000	7,000 00	110	10,628	10,628	8,846 00
Do.....	35	5,000	12	400	1 00	1,680	1,680 00	35	1,680	1,680	1,680 00
Westmoreland.....	6	.....	5	.....	1 25	.....	.....	6	.....	.....	.....
Wyoming.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	1,944	.....	.....	.....	.....	.....	.....	1,944	114,535	114,535	128,097 00

\* Five cents per pound.

RHODE ISLAND.

Providence.....	50	8,000	5	141	2 00	252	504 00	50	252	504 00
Washington .....	5	600	5	40	1 25	10	12 50	5	10	12 50
Total .....	.....	.....	.....	.....	.....	.....	.....	55	202	516 50

3 GR

SOUTH CAROLINA.

Anderson.....	8	.....	50	.....	1 25	.....	.....	8	.....	.....
Barwell .....	3	.....	100	100	1 50	300	375 00	3	263	356 25
Do.....	2	8,000	75	150	1 50	225	337 50	.....	.....	.....
Chester.....	10	8,000	25	200	1 00	300	500 00	17	500	500 00
Do.....	25	2,000	.....	.....	.....	.....	.....	.....	.....	.....
Greenville.....	50	4,000	50	450	1 50	11,250	16,875 00	50	11,875	16,875 00
Do.....	30	4,000	50	500	1 50	12,500	16,875 00	.....	.....	.....
Lexington .....	25	2,000	10	100	2 00	250	500 00	25	250	500 00
Orangeburg .....	40	5,000	20	200	1 25	1,600	2,900 00	40	1,600	2,900 00
Williamsburg .....	50	3,000	20	250	85	2,500	2,125 00	50	2,500	2,125 00
Total .....	.....	.....	.....	.....	.....	.....	.....	193	16,988	22,356 25

TENNESSEE.

Bedford.....	5	4,000	25	500	1 50	625	937 50	47	1,107	1,163 60
Do.....	123	800	20	95	1 90	2,337	2,103 30	.....	.....	.....
Do.....	12	2,500	15	200	1 25	360	450 00	.....	.....	.....
Campbell.....	5	2,500	.....	150	1 50	.....	.....	5	.....	.....
Carter.....	10	3,000	75	300	1 00	2,250	2,250 00	10	2,250	2,250 00
Coffee.....	30	.....	1	.....	1 00	.....	.....	30	.....	.....
Cumberland.....	17	1,500	50	100	2 00	850	1,700 00	17	850	1,700 00
Dickson.....	50	300	10	20	1 00	100	100 00	50	100	100 00
Grundy.....	20	1,700	80	165	1 00	3,120	3,120 00	.....	.....	.....
Do.....	40	2,000	100	140	65	5,600	2,640 00	87	6,906	7,253 00
Do.....	200	16,000	15	400	1 25	12,000	13,000 00	.....	.....	.....
Do.....	50	.....	50	150	85	3,750	3,187 50	50	3,750	3,187 50
Henry.....	5	4,000	.....	.....	.....	.....	.....	5	.....	.....
Humphreys.....	3	2,400	50	130	1 00	3,000	3,000 00	40	3,000	3,000 00
James.....	40	4,000	20	285	3 75	3,700	21,375 00	100	3,700	21,375 00
Jefferson.....	100	12,000	50	700	1 50	3,250	7,875 00	15	3,250	7,875 00
Knox.....	13	12,000	30	480	1 40	6,528	9,039 00	.....	.....	.....
Lawrence.....	34	3,550	40	400	1 40	7,500	7,500 00	27	7,014	8,269 50
Do.....	20	3,750	.....	375	1 00	12,000	18,000 00	60	12,000	18,000 00
Lincoln.....	60	15,000	20	1,000	1 50	12,000	2,250 00	.....	.....	.....
Do.....	15	.....	15	.....	1 25	.....	.....	17 1/2	3,000	2,250 00
Marion.....	20	3,500	60	250	75	3,000	3,750 00	25	3,750	3,750 00
Do.....	20	3,500	60	250	75	3,000	3,750 00	.....	.....	.....
Marshall.....	25	3,600	50	300	1 00	.....	.....	.....	.....	.....

*Table showing the production of grapes and yield of wine in the United States by counties—Continued.*

Counties.	Acres in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Gallons.	Total average wine production.	Total average value of wine crop.
		<i>Pounds.</i>	<i>Per cent.</i>	<i>Gallons.</i>	<i>\$</i>	<i>Gallons.</i>	<i>\$</i>	<i>Acres.</i>	<i>Gallons.</i>	<i>Gallons.</i>	<i>\$</i>
Maury.....	65	400	20	40	1 25	520	650 00	65	520		650 00
Monroe.....	10	4,000	50	150	2 00	750	1,500 00	7½	425		850 00
Do.....	5	5,500	4	500	2 00	100	200 00				
Morgan.....	5		100		1 75						
Rhea.....	10	1,420	10	125	1 50	125	187 50	5	125		187 50
Robertson.....	4	500	33	40	1 00	528	528 00	4	528		528 00
Rutherford.....	42	1,250	15	55	50	346	173 00				
Do.....	42	1,250	15	55	50	346	173 00				
Do.....	9	5,000	66	400	1 25	2,376	2,474 80	31	1,022		906 93
Shelby.....	300	2,000	5	500	1 00	7,500	7,500 00	300	7,500		7,500 00
Tipton.....	*50							50	50		
Washington.....	12	5,000			1 25			12	12		
Williamson.....	50	4,000		263	80			50			
Total.....								1,128	64,797		90,796 00

*Scuppernon.											
TEXAS.											
Brazos.....	40		33½		50					40	
Brown.....	10									10	
Collins.....	10		5		4 00					20	
Colorado.....	20				1 50					20	
Dallas.....	500	3,500	5	500	1 25	12,500	15,625 00	500	12,500		15,625 00
Fayette.....	50	2,000	33	370	1 50	9,405	15,107 00	500	9,405		15,107 00
Gillespie.....	4	2,000	10	500	1 00	200	200 00	4	200		200 00
Grayson.....	30	3,000	10	500	1 50	600	900 00				
Do.....	30	4,000	20	500	1 50	600	900 00				
Do.....	800	5	5	40	2 00	1,396	1,396 00	36	2,296		870 87
Do.....	800	2,100	10	150	1 50	325	787 50				
Harrison.....	35	2,500		300	2 00	100	200 00	10	100		200 00
Jasper.....	10	5,000	75	500	2 00	225	450 00	3	225		450 00
Marion.....	27	5,290	68	440	1 00	8,122	8,122 00	27	8,122		8,122 00

Parker.....	12	14, 000				2 00				12	
Pecos.....	10									10	
Refugio.....	8									8	
Robertson.....	50	1, 000	25	60	750	1 50	1, 125 00			50	1, 125 00
Rusk.....	3	3, 600	10	300	900	2 00	1, 800 00			3	1, 800 00
Titus.....	7		25	200	350	1 50	1, 325 00			7	1, 325 00
Walter.....	30									30	
Wilson.....	20	11, 200	5	680	680	1 00	680 00			20	680 00
Total.....											
										850	44, 704 87

UTAH.

Box Elder.....	25	1, 500	66	250	4, 125	2 00	8, 250 00			25	8, 250 00
Kane.....	520	5, 000	75	300	117, 000	2 50	202, 500 00				
Do.....	400	2, 500	90	150	54, 000	1 00	54, 000 00			523	141, 500 00
Do.....	650	2, 450	80	150	78, 000	1 00	78, 000 00				
Salt Lake.....	13	275	10			2 00				13	
Tooele.....	3	1, 500	90	300	4, 050	2 00	8, 100 00			3	8, 100 00
Washington.....	90	3, 000	40	400	21, 000	75	16, 200 00			92½	18, 075 00
Do.....	95	3, 000	70	600	26, 600	75	19, 950 00				
Total.....										658½	175, 825 00

VIRGINIA.

Albemarle.....	550	3, 000	80	200	88, 000	50	44, 000 00			373	45, 680 00
Do.....	370	3, 000	80	200	59, 200	80	47, 360 00				
Do.....	200			300	57, 121					170	
Alexandria.....	170	1, 200	2	80	272	1 00	200 00			20	200 00
Alleghany.....	20	1, 500	10	100	16, 000	70	11, 200 00			35	7, 001 00
Bedford.....	20	4, 000	80	1, 000	3, 750	75	2, 812 00			30	10, 500 00
Do.....	50	10, 000	75	100	8, 400	1 25	10, 500 00			100	
Botetourt.....	30		70	400							
Caroline.....	100										
Dinwiddie.....	160	800	50	50	4, 000	1 00	4, 000 00			84	2, 337 00
Do.....	9	6, 000	50	200	900	75	675 00				
Fairfax.....	200	2, 000								109	
Do.....	60	2, 000	1	133	80						
Do.....	68	3, 000									
Hanover.....	100	1, 200	90	26	2, 340	1 00	2, 340 00			100	2, 340 00
Henrico.....	66	4, 500	100	300	19, 800	75	13, 850 00			66	13, 850 00
King George.....	50		50							50	
King William.....	100	1, 500	50	300	15, 000	60	9, 000 00			100	9, 000 00
Lunenburg.....	4	2, 000	80	150	4, 800	50	2, 400 00			4	2, 400 00
Mathews.....	150	200	60	250	22, 500	2 00	45, 000 00			150	45, 000 00
Middlesex.....	40	2, 000	25	125	1, 250	1 00	1, 250 00			40	1, 250 00

Table showing the production of grapes and yield of wine in the United States by counties—Continued.  
 VIRGINIA—Continued.

Counties.	Acres in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Total average wine production.	Total average value of wine crop.
		Pounds.	Per cent.	Gallons.		Gallons.		Acres.	Gallons.	
Nelson.....	12	4,000	100	300	\$0 50	3,600	\$1,800 00			
Do.....	65	3,500	240	75	75	12,480	9,360 00	42	16,026	\$10,120 00
Do.....	80	5,000	80	500	60	32,000	19,200 00			
Do.....	12	4,000	33	280	85					
Norfolk.....	65	3,600	50	325	75	10,562	7,920 50			
Do.....	500	3,600	25	300	80	37,500	30,000 00	282	24,031	18,900 25
Orange.....	25	2,500	50	200	60	2,500	1,500 00	25	2,500	1,500 00
Prince William.....	60	3,000	50	300	1 00	9,000	9,000 00	60	6,000	9,000 00
Pulaski.....	28		50		1 00			28	1,330	1,330 00
Rockbridge.....	30	800	50	82	1 00	1,330	1,330 00	30	420	1,420 00
Rocky Mount.....	6	2,000	50	140	1 00	420	1,420 00	6	975	1,950 00
Spotsylvania.....	5		75	260	2 00	975	1,950 00	5		
Tazewell.....	300	2,600	33	70	1 50	6,930	10,395 00			
Warren.....	80	4,000	100	500	60	40,000	24,000 00	190	23,465	17,197 00
Do.....										
Total.....								2,099	232,479	200,045 25

## WEST VIRGINIA.

Counties.	Acres in vines.	Yield of grapes per acre.	Proportion of grape crop used in wine-making.	Wine per acre.	Value of wine per gallon.	Total wine production.	Total value of wine crop.	Total average acreage in vines.	Total average wine production.	Total average value of wine crop.
		Pounds.	Per cent.	Gallons.		Gallons.		Acres.	Gallons.	
Doddridge.....	25	2,800	50	235	40	2,937	1,174 80	25	2,937	1,174 80
Hardy.....	13	2,000	50	800	50	6,000	3,000 00	17½	6,000	3,000 00
Do.....	20		50							
Jefferson.....	16	4,000	25	250	1 50	1,000	1,500 00	14	740	1,000 00
Do.....	12	4,000	20	200	1 25	480	500 00			
Lewis.....	10	2,500	50	450	1 00	2,250	2,250 00			
Do.....	6	5,000	50	400	1 25	1,200	1,500 00			
Do.....	10	5,000	50	250	1 00	1,250	1,250 00	8½	1,566	1,666 00
Marion.....	45	16,000	50	1,000	80	22,500	18,000 00	45	22,500	18,000 00
Monongalia.....	50	20,000	25	600	2 00	7,500	15,000 00	50	7,500	15,000 00
Monroe.....	100	3,000	83½	225		742	11,250 00	10	742	
Ohio.....	100	3,750	50	300	75	15,000	18,000 00	1 30	19,500	14,625 00
Do.....	160	3,750	50	300	75	24,000	18,000 00			



Preston.....	25	6,000	1	400	1 25	100	125 00	25	100	125 00
Putnam.....	6		100	600	90	3,650	3,240 00	6	3,600	3,240 00
Ritchie.....	10		75		1 00			10		
Wetzel.....	25	2,000	50	135	75	1,682	1,263 00	50		
Do.....	75		66	200	60	10,000	6,000 00	75	5,841	3,631 00
Wood.....	75	3,500		250	1 25					
Total.....								466	71,026	61,461 80

WISCONSIN.

Brown.....	7	5,000	30	40	1 50	180	325 00	7		
Buffalo.....	15	600	50		1 25			11	180	325 00
Do.....	6		50		1 00					
Dodge.....	4	600	75	50	2 00	150	300 00	4	150	300 00
Grant.....	50	1,600	75	100	2 00	3,750	7,500 00	50	3,750	7,500 00
Jefferson.....	20	7,000	50	400	70	4,000	2,800 00	20	4,000	2,800 00
Juneau.....	15	5,000								
Do.....	10	5,000						12½		
La Crosse.....	20	2,500	10	166	2 00	932	664 00	20	332	664 00
La Fayette.....	15	6,000	25	400	2 00	1,400	2,800 00			
Do.....	10	8,600	10	573		573		13½	941	1,825 00
Do.....	2	8,000	85	500	1 00	850	850 00			
Marquette.....	3	4,000	75	200	1 00	450	450 00	3	450	450 00
Richard.....	5	2,000								
Do.....	6	500	10					5½		
Rock.....	10	3,000								
Sauk.....	10	4,000	10	500		500		10	500	745 00
Vernon.....	50	2,000	10	133		665		50	665	990 85
Total.....								217½	10,908	15,559 85

The tables show what is well known by all having a general knowledge of the wine production of the country, that California takes the lead in the area planted in vines and the quantity of production. There some of the fruit finds its way to the markets for table consumption, the raisin industry consumes an important proportion, while a still very considerable quantity is worked up for the still. The vines being generally free from disease and planted more closely, the yield per acre in fruit and wine is much greater than prevails east of the Rocky Mountains. Some sections in the State are, it is true, affected by the redoubtable phylloxera, but through the influence of the State Viticultural Commission, earnestly supported by the State legislature, energetic measures are being established to restrain its ravages. But this is about the only source of injury to the vines in the State, and the acreage in vineyards is constantly increasing. According to a writer in the Commercial Herald of San Francisco the area planted during the past five years has been as follows: In 1876, 4,000 acres; 1877, 5,000 acres; 1878, 7,000 acres; 1879, 9,000 acres; 1880, 10,000 acres.

The State Viticultural Commission estimates the production of wine for the State in 1880 at from 10,000,000 to 12,000,000 gallons, and places the approximate quantities of each kind at the following figures: Dry-wines, 9,500,000; sweet wines, 700,000.\*

From the report of the commission we glean the following figures, showing its estimate for acreage and production in the several counties:

Counties.	A cres in vines.	Total pro- duction.
		<i>Gallons.</i>
Sonoma .....		2, 180, 000
San Francisco .....		250, 000
San Mateo .....		90, 000
Alameda .....		270, 000
Santa Clara .....		580, 000
Santa Cruz .....		172, 000
San Benito .....		60, 000
El Dorado .....	1, 100 or 1, 200	350, 000
Nevada .....	400	
Placer .....	800 to 900	
Amador .....	600	
Calaveras .....	400	
Tuolumne .....	400	
Mariposa .....	500	
Los Angeles .....	5, 713	3, 800, 000
Napa* .....		2, 460, 000
Contra Costa .....		25, 000
Solano† .....		160, 000

\* Brandy, 60,000 gallons.

† Brandy, 300 gallons.

In our own tables we find that there are wanting returns from five counties for which the quantities of the production are given in the report of the Viticultural Commission just quoted, and that they are wanting for two counties for which only the acreage is given by the same authority. The first represent, according to the figures given, a production of 1,180,000 gallons, while if for the latter we assume that 60 per cent. of

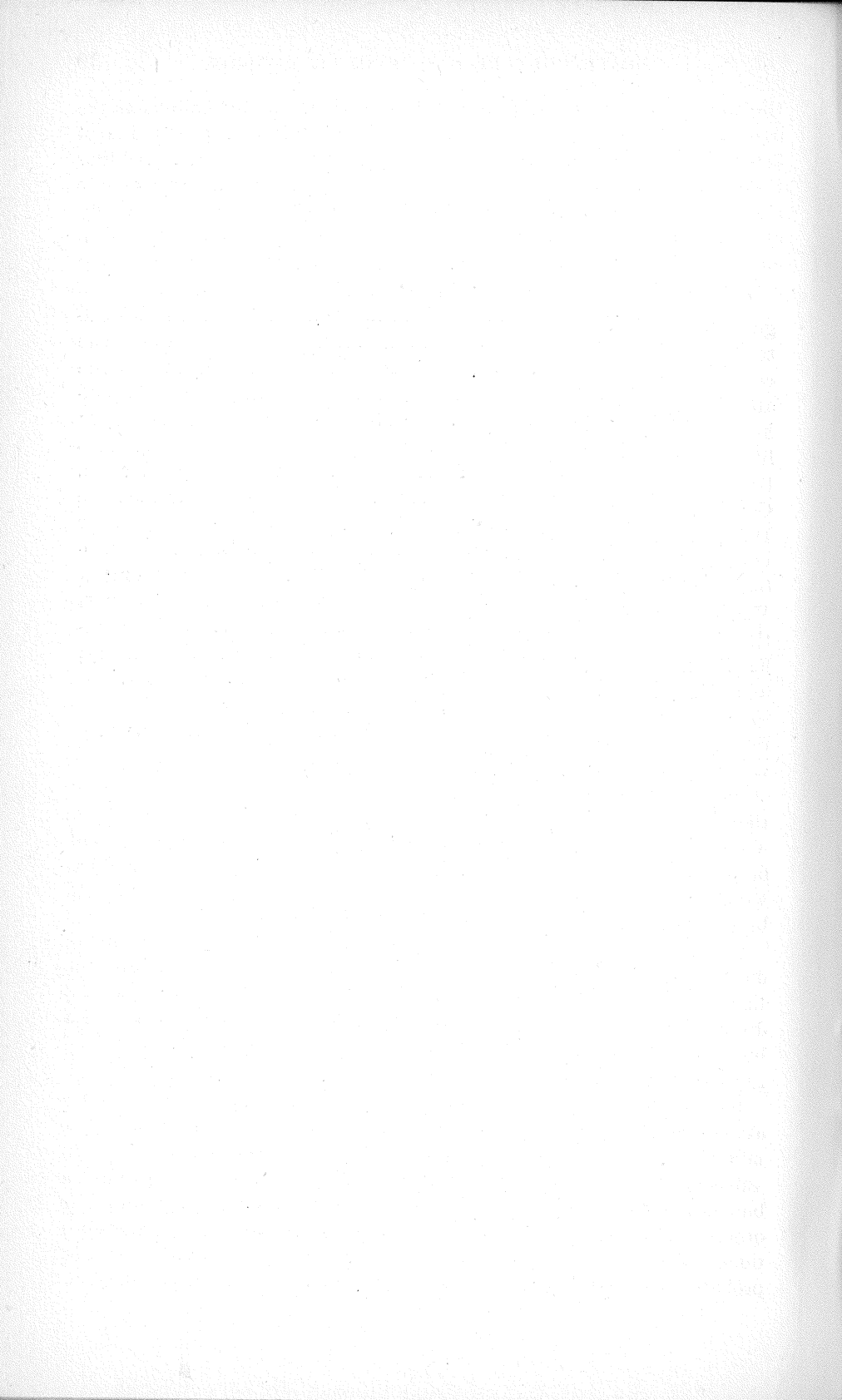
\* First Annual Report of the Board of State Viticultural Commissioners, p. 14.

the area in vines is devoted to wine production, and 500 gallons as the average yield per acre, it will represent an additional production of 330,000 gallons, or for the whole a total of 1,510,000 gallons. Adding this total to the average total we have obtained from the returns made us we have a grand total of 15,067,155 gallons, which figure is probably as nearly correct for the production of the State as may be made without a thorough personal survey. It shows that California produces nearly two-thirds of all the wine made in the United States.

In the States east of the Rocky Mountains the industry is in no locality so concentrated as in California; indeed, it has nowhere had the same encouragement of success. With the exception of New Mexico, where the grapes grown are descended from the earliest importations by the Spaniards to the American continent, there is no section east of the Rocky Mountains so free from diseases and in which the yield per acre reaches the enviable quantities by which the California vintners are rewarded. On the other hand, however, the eastern vintners receive their measure of reward in the higher prices obtained for their products, being nearer to the localities of consumption. Thus the total value of the wine produced east of the Rocky Mountains is more than twice as great as that produced in California, while the product in the latter section is at least from three to four million gallons greater than in the former. The total result shows that the industry is of no mean importance in the country, and that it is worthy of all the encouragement that can be given it.

Respectfully submitted.

WM. McMURTRIE, PH. D.



## APPENDIX.

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We give below the statements offered in response to the request in the general circular, asking for entry of any information considered of value to the industry. They furnish a pretty fair indication concerning the condition of grape culture and wine making throughout the country, and the sentiments of those engaged in it concerning the different influences bearing upon them. From them we find that comparatively little change has been made during the past ten years with reference to the kind of grapes grown in the Eastern States. Of the red grapes the Concord and Ives Seedling, and of the white ones the Catawba and Delaware, seem through the Northern States to be the favorites. Other varieties occupy less important positions in the lists of grapes grown, but those of the *Labrusca* generally prevail. Wherever the Nortons' Virginia and other varieties of the *Aestivalis* family have been tried they seem to have given tolerably good results. At any rate they are hardier as concerns attacks from insects and vegetable parasites, such as mildew, rot, &c., while if their yield of wine as to quantity is inferior to that of the Concord the quality of the product is found much superior. On account of the difficulty of multiplication of the *Aestivalis* varieties the extension of their culture is slower than is possible with other varieties, while the extensive demand for table grapes east renders their competition with the *Labrusca* varieties less effective. But among wine producers and consumers a strong sentiment is growing in their favor, and with the increasing interest being manifested in American wines they must eventually become the bases of the vineyards of the better class.

In the States south of the thirty-fifth parallel the *Vulpina* and *Candicans* are the favorites on account of their abundant production, the little difficulty of their culture, and their freedom from every species of disease. Other varieties are being introduced and find great favor, but the native varieties will doubtless continue for several years to supply the stocks for the wines of southern production.

For the diseases preying upon the American vines, several remedies are reported in the following remarks. These refer more especially to mildew and rot, the leading diseases effective in decimating the vineyards of the United States. The use of paper bags for inclosing the bunches finds favor in some sections, while it has been denounced in others. They will doubtless be found the most valuable in those sections favored with long seasons for ripening the fruit. But it is also probable that preventive measures, such as careful removal and destruc-

tion of canes after pruning, and judicious and persistent use of sulphur either alone or combined with lime would also prove effectual and remove the necessity of excluding the light from the berries, so well known to have a beneficial effect upon ripening.

Other remedies are suggested by the various writers whose names and addresses are given for the benefit of those who may desire to open correspondence on the various subjects. Their value can be determined fully only by experiment with them in other sections. The fact that they are reported by practical vineyardists makes them worthy of respect. The remarks of these writers also furnish details concerning the prospects of the industry in various sections and the prices obtained for the products. Altogether they will prove of great interest to all having at heart the promotion of the industry in the United States.

#### ALABAMA.

D. W. MERRITT, Abbeville, Henry County :

The Scuppernong grape is about the only grape that will live for any length of time. It has no disease or insect to attack it. The fruitage is enormous. It rarely fails. Heavy rainstorms, when in bloom, will greatly injure the yield. It makes a very fine wine. There is or would be no limit to the wine production from this grape if attention was given to it. Wild vines are found at times. Lands are very cheap here and timber in abundance for arboring. White oak in the swamps for staves. Many have one or two vines for eating purposes.

If the wastage could be made cheaply into brandy much more attention would be given to it and also to fruit raising.

F. SULZNER, Citronelle, Mobile County :

I have about one acre in Scuppernong grapevines which has produced already over 200 bushels of grapes in one season. I only take two gallons of juice from a bushel of grapes. Only after the wine is three years old do I sell it, and then I get from \$10 to \$12 per case of 12 quart bottles. An inferior quality sells more readily at \$1.50 per gallon in the Mobile market. The wine when well made and of sufficient age is unique in its pleasantness of taste, and would prove of immense value to our southern country if it could be introduced to European markets where it would be better appreciated as well for its intrinsic qualities as for its originality.

J. C. UNDERWOOD, Huntsville, Madison County :

The wine made in this vicinity is very fine. This is certainly a very superior wine locality. I have on hand, of last year's wine, Concord, Delaware, Isabella, Catawba, Cynthiana (which is a very fine Port). Ives and Isabella mixed, is the best that I have. Scuppernong is very fine and much in demand at \$1.25 by retail dealers. All the grapes I have mentioned do well here, except the Isabella, which does not ripen well. Grape planting is slowly on the increase here.

J. P. STELLE, Mobile :

The Scuppernong variety of *Vitis vulpina* is the only grape grown in Mobile County, Alabama, for making wine. Its quantity is reckoned by measured bushels of stemless berries, and I do not know exactly what a bushel would weigh, hence am unable to give a correct answer to the second question. One bushel of berries makes three gallons of wine. Three hundred bushels to the acre may pass as about the average yield of old vines as cultivated here; the yield might be made much larger with proper management. There is one vineyard in the county of 75 acres; the other vineyards are usually small.

T. W. PRICE, Rehoboth, Wilcox County :

The best and most profitable grape in this part of the State is the Scuppernong. It is used mostly for making wine. It is thrifty, long lived, and the crop rarely fails after the vines get three years old. The vine is propagated from the dry branch of the old vine being laid on the ground in the fall or winter and covered with dirt. In the spring it will take root, and it can be cut off in the fall and planted out. You then have the genuine fruit of the mother root. The other kinds of foreign grape do not flourish or live but a few years, and are not much propagated either for table or wine. My estimate above has reference almost entirely to the Scuppernong grape. It is the

grape for this country, and if we had a market for the wine there is a fortune in a few acres.

CHARLES BLATO, Cullman, Cullman County:

The high situation of this settlement is a great drawback on the successful cultivation of grape vines. Herbemont and Agawam grape vines suffer principally by frost, and Catawba will not succeed here. The most reliable grape vines are Concord, Clinton, Virginia Seedling, Missouri Riesling, Elvira, Merrimac, while some other white grape vines grow very well here. There has been made a trial with some imported German grape vines, but it proved unsuccessful.

Dr. J. W. SMITH, Centre, Cherokee County:

Of the 36 acres reported above but two or three are in full bearing. The rest are just coming into bearing this year (1880), and will come in this coming year (1881). There is quite a lively interest being taken in wine growing now from the success of my friend E. S. Cobb, of Grantville, to whom you sent by my request last spring some dozen varieties of the foreign grapes to be tested in the open air in his vineyard. He succeeded in rooting most of the vines sent him. Lost about three I think. His location above the dew line promises to make a success of open-air culture of the foreign varieties you were so kind as to send him. I am looking forward to the experiment with much interest, and believe he will succeed in maturing them without the assistance of glass, of which you shall be promptly informed. In the above enumeration of acres I include my own vineyard of 18 acres. Of this amount 17 acres are Scuppernongs that just came partially into bearing this year, but will continue to double their income for the next coming ten years. There will be planted about thirty acres more of vines that I know of in this county this spring, and perhaps as much as fifty acres. The wine made finds a ready market at home.

W. H. SILVER, Bay Minette, Baldwin County:

The Scuppernong is the standard grape above all others, does well with very little attention. The finer varieties are being cultivated some.

#### ARKANSAS.

D. D. FORMAN, Hackett City, Sebastian County:

The true Aestivalis does remarkably well here, among which the Cynthiana (supposed to be a native of this State) grows luxuriantly, and produces a wine which will rank among the best *red* wines of this or any other country. Foreign varieties have not been tried here. We plant our vines 9 by 18 feet apart, and trellis the long way with three to four slats.

J. W. MARTIN, Warren, Bradley County:

The grape culture in our county is on a very small scale, merely experimental on the part of a few individuals, and they inexperienced. We think our soil and climate well adapted to the production of grapes and wine of a very fine quality. We notice that the must, treated to 1½ pounds of sugar per gallon, and put into casks containing from 10 to 40 gallons each, and set away in the ordinary out-houses of our country, exposed to the sun to some extent, and to the heat of our long hot seasons, have no tendency to acetic fermentation, but improve with age, becoming very mellow and fruity. The Scuppernong, Cynthiana, and Ives Seedling are the varieties principally grown, and are not as yet subject to any diseases.

HOMER CARR, Jonesborough, Craighead County:

The only grapes grown in this county are upon small scale, a few vines in the yard. Concord rots badly; Catawba worthless; Norton's Virginia valuable and satisfactory in growth and production; Herbemont produces very well, but rots somewhat.

N. B. THWEATT, Hickory Plains, Prairie County:

I made 100 gallons of wine this season that was tested against some California wine, and it was conceded by the judges that mine was superior. I realized \$2 per gallon for all that I put on the market. I have not the facilities for wine making that I should have. Our grape crops never fail; have had from a good to an abundant crop since my vines commenced to bear. There seems no particular kind of land here that the vine thrives and does better on than another. I attribute it to the clay subsoil that underlies all of this portion of the State. The vines here are never in the least winter-killed; have no parasite or mold.

J. F. SHULER, El Dorado, Union County:

The grapes raised in this county are the Scuppernong, and a continuous rain in the month of May (when in bloom) is very ruinous to them.



C. M. NORWOOD, Bluff City, Nevada County:

Grape growing is not an industry of this county at all, nevertheless it is one of the finest grape-growing countries in the Union, California not excepted. Grapes grow spontaneously all over the forest here, of fine size and flavor, and in vast quantities. This county is the native home of the famous "*Onachita*" grape. Thousands of gallons of splendid wine could be made annually from grapes grown in the wild woods. I might truthfully say that three-fourths of this county is a natural vineyard, planted by God himself. I have made a few gallons of wine from this wild grape that has been pronounced by wine drinkers as being equal to the best port wine. This grape is equal to Ives Seedling, or any other grape of the domestic class. I am sure any person visiting this country in August and September would be utterly surprised and carried away with the native grapes of this country.

Dr. GEO. W. LAURENCE, Hot Springs, Garland County:

I have the largest acreage in vineyard, with the greatest variety of vines in culture in the county. Our standard vines are of the *Vitis cestivalis*, belonging to our State, together with Norton's Virginia seedling. Concord, Delaware, and Martha are a success with us. Ives seedling is one of our hardiest vines; grapes good for table and wine; flavor very fine. Scuppernong is a choice wine grape in this region. Catawba is a failure with me, as well as all of Rogers's Hybrids, Iona, and many others, in my experimental culture. I have twenty-one acres in grape-vines, and over one hundred and thirty varieties of grapes. I feel sure that we are in the best belt or zone of latitudes, embracing the whole State, for the culture of grapes, in productiveness and flavor, on the continent. My vineyard is from four to seven years old.

#### CALIFORNIA.

W. H. BROOKS, Bakersfield, Kern County:

Although it is believed that this county is especially adapted to the vine, scarcely any attention so far is given to it. Its cultivation is not merely in its infancy, it is even in its embryo. A few table grapes have been raised in different localities far apart, but none for wine-making. Sufficient, however, has been done to prove that the grape will grow, and grow in abundance, if the inhabitants could be induced to engage in its culture.

JOHN KING, Columbia, Tuolumne County:

About twenty-five tons were taken across the mountains to the Boda mine, selling at the vineyard at two cents per pound; these were mostly Purple Damasca. About 75 tons, mostly White Muscats, were cured into raisins, making about twenty-five tons after curing. Raisins were worth ten cents per pound in 5-pound boxes, and 9 cents in 10-pound boxes. Ten years ago there were at least 100 acres more in grapes than at present. Some were mined out, others neglected, died out, while others have been dug out and the land used for other crops.

J. BIGERSTAFF, Lakeport, Lake County:

Our county is new and somewhat isolated from market, having no railroad accommodations. Our citizens have not given much attention to grape raising. Experimenting in a limited way, however, to ascertain whether our soil is adapted to the production of grapes has been going on, and the result has proven most satisfactory. It is likely that within the next two or three years quite a number of vineyards will be planted. The belief is entertained by most of our prominent citizens that grape culture in our county will in a few years prove very profitable.

FRED. AXE, Eureka, Humboldt County:

This is not a grape county. There are no grapes grown here except now and then a grape-vine in some garden. Grapes do not ripen here on account of too much fog during the summer months. I do not suppose there are over 100 grape-vines in the whole county, and no wine made.

J. Q. A. CLARK, Woodland, Yolo County:

The other two-thirds are converted into raisins or sold for table grapes. There will probably be an increase of over 100 per cent., about one-half of which will be of the finer varieties of wine grapes; the balance, raisin and table grapes.

H. BARRETT, Lincoln, Placer County:

The crop on this ranch stands about as follows: About 20 tons were made into raisins; about 100 tons were sold for table use; and about 171 tons were made into wine. There is said to be 100 acres in the vineyard.

PETER VAN BAUER, Napa, Napa County:

Grape culture in Napa County has increased very much since last year, on account of better prices and larger demands for wines. It is calculated that in the coming

season about 2,500 acres of new vineyards will be set out. Considering that the grapes now planted are of the qualities better suited to the wine-press, it is fairly estimated that the wine and grape interest of Napa County will be increased fourfold in five years from now.

MANUEL EYRE, Secretary State Vinicultural Association, Napa, Napa County :

By actual count of the different cellars, I find there was made last year (1880) 2,830,750 gallons of wine, and there may be a few small makers omitted. The yield of grapes was about 16,955 tons, perhaps a little less, as I calculate 12 pounds to a gallon of wine; some grapes will yield but 140 gallons to the ton, while others will give as high as 160 gallons. I had hoped to send the whole yield &c. of the State, collated, but that will be prepared by the State commission, so I send only Napa County's yield.

JACOB SCHRAM, Saint Helena, Napa County :

There are 49 wine cellars in Napa county. The product in 1880 was 2,830,750 gallons, consuming 16,984 tons of grapes. There are some grapes made into brandy, some dried for raisins, and some sold to the San Francisco and Eastern States market for table use. The price of wine varies according to the location in which it is made and the age. As for myself I live in the hills, 500 feet above the valley proper; I have wine from two to three years old; I can easily sell it at \$1 per gallon or at \$5 per case, containing one dozen bottles. There will be about 2,000 acres of grape-vines planted this year.

GEORGE MCCOWEN, Ukiah, Mendocino County :

This is the first year there has been any effort at wine-making in the county. One man made 1,600 gallons from about 4 acres (2,500 vines), sold it at 75 cents, though he informs me it would be worth only about 40 cents in San Francisco. Through the county there are more vineyards of less than half an acre than there are of more than that; but little juice expressed, except here and there a few barrels for vinegar. The main portion of the crop goes for table use. The past year's crop was not up to the usual standard, neither in quantity nor quality, and was two or three weeks later than usual ripening. The crop pretty much throughout the county was affected very considerably by a minute insect, apparently of the grasshopper kind (as viewed by the naked eye), which congregated on the under side of leaves and seemed to draw the sap from the vine and cause the growing grapes to blast and burst open previous to ripening. The insects are almost white, with a greenish shade, winged, and from less than one-sixteenth to one-eighth inch in length. They seem to affect the foreign varieties of grapes more than they do the native, or, as termed here, the Mission.

D. A. LEARNED, Stockton, San Joaquin County :

My vineyard, although established eight years, has never been in full bearing, because I have been grafting in new varieties and restricting production in some market varieties to increase size. I have been pruning short certain varieties which should have been pruned long, such as Riesling, Sultana (white and seedless), Morocco, &c.

J. H. DRUMMOND, Glen Ellen, Sonoma County :

In connection with the above I must add that, from the fact that, vineyards are scattered all over Sonoma County, it is extremely difficult for a non-official to arrive at an exact estimate, and as much of the so-called bearing vineyard must just have come into bearing it greatly reduces the average weight of grapes and quantity of wine per acre. The wine is calculated as clear wine fit for the market, and the price from the sales that have already taken place, though it seems probable that the price will, if anything, become slightly lower. The grapes not made into wine are chiefly sent to the market for the table. From indications seen, when recently passing through the county, I believe that at least 2,000 acres will be planted this season. The chief wine grapes are: For red wines, Zinfandel, Mission, and Malvoisie; for white, Reisling, Gutedel, Berger, and Mission; for sweet wines, (Sherry and Angelica) Mission. The vines being planted this season seem chiefly to be Zinfandel, Berger, and Gutedel. Other varieties in lesser quantities. Vines grown in Sonoma County: Zinfandel, Mission, Malvoisie, Rose of Peru, Flaming Tokay, Black Hamburg, Charbonieux, Johannis, and Franken Reisling. The so-called Grey Reisling, varieties of Chasselas, Berger, Muscat, Cornichon,\* Black Morocco,\* White Nice,\* and many others to a small degree.

WM. G. PHILLIPS, Stockton, San Joaquin County :

With the exception of the reclaimed Tule land, nearly all of the land in this county is adapted to the raising of grapes; but until the past season there has been no inducement for their cultivation, in consequence of the low price. This year there will be a greater number of acres planted to the vine than ever before in any one season, as the demand for wine is increasing.

\* For table use.

W. B. WEST, Stockton, San Joaquin County:

Our country is not a wine-producing one, much of the crop is made into brandy. The climate is very warm, and our wines resemble the Spanish wines. Muscat, both sweet and dry, is very easily produced. Port and Sherry can be produced, but requires time and skill; our old wine often turns into very good natural sherry. A large amount of grapes are shipped to San Francisco for table use, nearly one-half of our product. Our white wine is not equal to that produced in the coast counties, it possesses too much alcohol. Claret is subject to the same objection. The soil is too rich and climate too warm to make light wines. Ports, sherry, and sweet wines do better.

C. FREYSCHLAG, San José, Santa Clara County:

It is very difficult to give the average yield of the vineyards of this county, so many new vineyards have been planted out and yield but little yet, and some of the old vineyards have been neglected, being heavily mortgaged and the owners therefore discouraged. The reason that the price of wine averages so low is on account of some wines being only fit for the still, and the distillers are unable to pay more than 12 or 13 cents per gallon on account of the high revenue tax on brandy. It would be well if the tax on grape brandy could be reduced to half what it is now to give encouragement to viniculturists.

HENRY M. NAGLEE, San José, Santa Clara County:

The above is the return made from the assessor's books, at my request, by the assessor of the county of Santa Clara, California, and is a low estimate. The vines are planted 6 feet apart in both directions and there are 1,200 vines to the acre.

H. R. SCHELL, Knight's Ferry, Stanislaus County:

The wines of this county are very similar to those of Spain and Portugal; the vines producing a natural port, sherry, and Maderia; the grape containing a large percentage of saccharine matter, producing a wine of a rich and generous character, rich in alcohol and preservative qualities. There is a vast amount of land in this county well adapted to wine and grape culture, and one of the most favorable, if not the best, for raisin culture, with grand facilities for irrigation. Stanislaus County borders on the foot-hills of the Sierra Nevada Mountains, which is considered the best vineyard and fruit lands of the State, our vines being exceptionally free from disease and frost. The only disease noticeable is mildew, and that in very unfavorable localities in vineyards situated near bodies of water, such as reservoirs, or near the banks of the Stanislaus River, and that disease yielding readily to the treatment of sulphur.

W. W. WATERMAN, Santa Cruz, Santa Cruz County:

Owing to the small demand for California wines, and consequent low prices, previous to 1880, many of the vineyards were neglected somewhat, and have not recovered from such neglect. No doubt that a few years hence the average yield will be somewhat greater, as most of the vineyards that were well kept have this year averaged nearly 800 gallons per acre.

GEORGE HOOD, Santa Rosa, Sonoma County:

In the mountain valleys suitable for vines, a great many vineyards are planted, and this year, I think, there will be set out 7,000 acres more, all of the best known varieties, and about 2,500 acres will come in bearing this year; also a good number of cellars built suitable for curing and storing wine.

CHRISTIAN WEISE, Sonoma, Sonoma County:

I have principally the three following choice foreign varieties of grapes, viz: "Gutedel," "Berger," and "Zinfandel." The two former are very much in demand as wine grapes for white wine. The Gutedel has an exquisite flavor. The Berger, as far as my experience goes, is an immense bearer. The Zinfandel, of course, is the grape *par excellence* for the various qualities of red wine.

ISAAC DE TURK, Santa Rosa, Sonoma County:

Many vines in this county are not yet in full bearing. If all were in full bearing the yield would be much above three tons to the acre. The most productive vineyards yield from six to seven tons to the acre. The acreage of vineyard in this county can be increased fourfold without encroaching on any other interest.

MATTHEW KELLER, Los Angeles, Los Angeles County:

Grapes are generally planted 6 feet apart, 1,210 to the acre. Ten pounds of grapes to the vine is an average yield; 13 pounds of grapes will make a gallon of wine; 25 per cent. of the amount of wine made is distilled into brandy.

HENRY KROEGER, Anaheim, Los Angeles County:

Five per cent. of the grape crop was used for raisins. Three pounds of grapes make one pound of raisins.

F. J. EISEN, Fresno City, Fresno County:

Zinfandel cuttings not rooted; planted March, 1878, gave this year (1880)  $2\frac{1}{2}$  tons per acre. Many were replanted last year.

F. STRENZEL, Martinez, Contra Costa County:

During a series of years 3 tons a year from one acre can be relied upon as an average. Heretofore table grapes were most profitable, with the increased demand for our wine; red wine grapes command the best price, although it is assumed that within a short time raisin grapes will be the most profitable to individual producers.

HENRY GERKE, Vina, Tehama County:

There are very few vines in the county besides my own, and all the wine made is only a few gallons for domestic use.

ROBERT ROSEVEARE, Red Bluff, Tehama County:

The grape industry in Tehama County is as yet in its infancy. A bright future is undoubtedly in store for the cultivator of the grape in this section, as the soil, climate, and extent of territory fitted for grape culture is here in abundance. The foothills of the two great ranges of mountains, the Coast Range and the Sierra Nevada, are admirably adapted to the growth of the vine, which can be brought to a high state of cultivation without irrigation. H. Gerke and R. Blossom have demonstrated the successful manufacture of wine. The former has done more toward bringing about successful manufactures of wines than any one in this section. He has the largest wine cellars in Northern California, capable of taking care of 100,000 gallons of wine. His wines have attracted the notice of wine dealers throughout the world. Mr. Blossom has a local reputation, of no mean merit. The Antelope Valley wines raised in his vineyard command 75 cents per gallon. In conversing with him on this subject (the future of the grape interests of Tehama County), he was very sanguine that the wine to be exported from this section in the future will be greater than the revenue now derived from wheat. Choice foreign varieties are being successfully raised from cuttings, bearing the second year after planting. Thousands of acres of land which now lie idle will, as soon as the tide of immigration sets this way, be planted to vines. Many of our small farmers have successfully started young vineyards, and within the next ten years Tehama County will rank high among the wine-producing counties of the State.

KOHLER & FROHLING, Glen Ellen, Sonoma County:

It is very difficult to give exact figures of the number of vines in each or either county or district, as these figures change every year, new vineyards being laid out and planted, and some old ones being in whole or partly uprooted on account of the attack of the *Phylloxera vastatrix*, or in order to replace old vines with new and better varieties. But we are pretty certain that the entire vintage for 1880 in the State of California will be about 11,000,000 gallons of wine, at 28 cents per gallon, \$3,080,000, and about 500,000 gallons of proof brandy, which sells now at about \$1.10 per gallon *in bond*.

D. C. YOUNG, Sonoma, Sonoma County:

The unusually heavy late rains of the springs (April 20) caused our grapes to be about one month later than usual, produced a large growth of vine, and more than average crop of grapes, which has commanded a high price (from \$20 to \$30 per ton, according to varieties and location, at wine press, the Reisling and Chasselas de Fontainbleau receiving the highest price). I had many years experience in raising corn in Northern Illinois. Have had nine years experience with grapes. My corn crop during the period I worked it ranged from \$9 to \$22 per acre, probably an average not exceeding \$15 per acre for labor and use of land. My grape crop has ranged from \$45 to \$120 per acre, a probable average of \$75 per acre. The labor attending the raising and marketing a crop of grapes I consider somewhat less than that of a crop of corn.

No frost here during December, but rainy; so far January clear and balmy.

R. B. BLOWERS, Woodland, Yolo County:

About 20,000 boxes of raisins, 20 pounds each were made in this county this year; about 65,000 in the State, worth \$130,000 wholesale. Our season was the most backward ever known, or we would have had 100,000 boxes. We are making advances in the knowledge of raisin curing in both sun drying and the use of artificial means as well as in packing, and I know of no cases in which full weights are not put up by growers. A very great impetus was given the grape industry during the past year, and at least 10,000 acres will be planted in this State; 75 per cent., at least, for wine. One of our last acquisitions is the seedless Sultana raisin grape, brought into general notice in the last few years. It has proved to be a great bearer, also a good wine grape. Our raisins do not grade quite as high as last year, on account of the season being too cool. A warm, early year is best. About 10 per cent. is placed in market

as cheap or cooking raisins. More than half of the entire crop is grown in this and Solano County.

ANSON S. MILLER, De Redwood, Santa Cruz County:

It is difficult to give the precise number of acres in vineyard, as there are many small vineyards from 5 to 10 acres. The weight of grapes produced per acre depends upon the locality and age of the vine. Many of the vineyards of this county are mostly of raisin and table grapes, which are marketed in San Francisco and Chicago, Saint Louis, and other eastern cities. The vineyards of California are threatened by the phylloxera, and should any remedy be discovered we hope your department will give it an extensive publication.

#### COLORADO.

EUGENE WESTON, Cañon City, Frémont County:

A very small proportion, probably one-tenth of vineyard set, yet in bearing, but will be next year. A great many thousand vines will be planted this spring. All vines planted in gardens for past ten years have been sure, prolific bearers; it is therefore predicated that this is an excellent grape-producing region. One man has four varieties California grapes—three white—that fruited abundantly this season. No disease or destructive insect has been noted to date. All grapes offered for sale were quickly taken at 15 to 20 cents per pound; at this price, of course, no wine made. The mining regions west and southwest are and will be our market.

A. BRIKBY, Boulder, Boulder County:

Grape growing has but just begun in this county, and it is too soon to make any reliable estimate of the weight of grapes per acre; but it is the opinion of fruit-growers that it is as good a grape country as California, excepting the greater liability to the grasshopper scourge. This year, for the first time, home-grown grapes appeared in the market. The opinion is gaining that the foot-hills of the Rocky Mountains are specially adapted to vineyards.

J. H. NEWCOMB, Denver, Arapahoe County:

There is probably not to exceed 1,000 vines that have been set out over three years in the county. I have vines on my place, set out in May, 1878, that I took up and exhibited at our last State fair, with 20 pounds of grapes on them.

E. J. HUBBARD, El Moro, Las Animas County:

Vines are but four years old, and just commencing to fruit. Altitude, 6,000 feet. I have the only vines in the county.

CRAWFORD CHASE, Colorado Springs, El Paso County:

But few vines planted as yet, and these are principally in gardens. We expect to put out several hundred in the spring, 1881.

#### DAKOTA.

H. D. E. ANDREWS, Greenwood, Charles Mix County:

In the spring of 1880 a few hundred vines were procured, mostly Concord, issued to and set out by the Indians. Probably 50 per cent. were killed by the drought. Think vine growing could be made a success with proper attention.

J. D. FLICK, Rockport, Hanson County:

There have been but very few vines planted in this county. The general opinion is that grapes will do well here. Last year being the first planted, no report can be made.

A. ZIENERT, Bon Homme, Bon Homme County:

Three years ago a party of Russians (German Russians, called the *Hutterische Society*) planted on a hill facing to the south about 1½ acres of grapes. This is the first experience in this county; a few in gardens have been planted since. The Russians, as we call them, say they are satisfied with their grapes; they raised about 800 pounds last summer, but think on the prairie, or even on a hill facing to the north, they would do better, as our overheated south winds are as injurious to grapes as they are to nearly all our other crops. On the bottom of our Missouri are wild grapes in plenty, with a very good grape some years; two years ago I tested some which were nearly as sweet as cultivated. I think that in this county 100 barrels of wine are produced every year from wild grapes. Mixed with water and sugar it makes a very good drink.

## FLORIDA.

JAMES W. LOCKE, Key West, Monroe County :

Grape culture has never been attempted in this part of Florida. Probably not 200 pounds of grapes were produced during the year in this county. There are a few vines in gardens, but I have never seen one here in a really thrifty condition; if they bear, the grapes seem to blight or mold before they arrive at perfection.

JOHN A. CRAIG, Tallahassee, Leon County :

The above has reference only to the bunch grape, as Concord, Ives, Delaware, &c. The Scuppernong produces from 1,000 to 2,000 gallons to the acre. Most of this variety of grape is made into wine; price will average \$1.50 per gallon. The *Vitis labrusca* and *Vitis Æstivalis* grow well and produce finely when properly pruned and cultivated. They net, when shipped to New York early in July, 10 cents per pound. The culture of the grape here is in its infancy, not more than 30 acres planted in this county. We have a vast field opened before us for profit in its culture. Our soil and climate are favorable.

JOSEPH G. KNAPP, Simona, Hillsborough County :

Five years' residence on the Rio Grande, at Mesilla, N. Mex., and a like period at this place, have convinced me that grapes will not thrive here as there. Whether we are in a region of too great rains, too far south, or by reason of the root louse destroying the vines, or the sandy character of the soil, I will not pretend to decide, but I am convinced that grape culture is out of the question here, except with the Scuppernong varieties. Tropical fruits, or nearly such, are more profitable and better fitted to our climate and soil, and more easy of culture.

GEORGE W. DAVIS, M. D., Jacksonville, Duval County :

There are but few grapes planted in this county. I am not aware that any one individual has as much as one acre planted in grapes. There are several who have a few vines, mostly of the Scuppernong species. The bunch grapes do not succeed well in the county. Very little wine is produced, and what is is only by amateurs. No market price that I am aware of. The soil in this county is too light and sandy for the *Labrusca*. *Æstivalis* grow well but rot badly, so there is no dependence to be placed in a crop. The phylloxera plays havoc with the northern and foreign sorts in the light soil.

C. C. PLAYER, Marion, Hamilton County :

The Scuppernong is gradually gaining in favor. In the very edge of the neighboring town of Live Oak there is a 5-acre vineyard of this grape, eleven years old, which has yielded 6 barrels of wine to the acre, besides affording fruit to many of the townspeople. The wine from this is made and kept in a "rudeshanty" of vertical planks, unchinked, many streaks of sunlight falling upon the barrels every bright day the year round; yet some drinkable wines are made and kept here. (This is mentioned as a curiosity—it speaks well for the Scuppernong.) Sugar is used freely hereabouts in the wine making—probably too much so. Steep mountain and hill sides, such as we read of in Portugal and Madeira, are wholly wanting in this county. It is probable that the California grape would flourish here, since the climate is similarly mild and the soils abound in sand alike.

HENRY I. STEWART, Jasper, Hamilton County :

There are many places in our county on which are a few vines, and grapes do well, but they are raised only for the use of the grape, and not for wine.

FRANK WHITE, Live Oak, Suwannee County :

The grapes principally grown in this county belong to the Scuppernong family, are very productive, and yield a crop every year, and need no pruning; are supported on trellises about 6 feet from the ground, the grapevines covering the entire surface overhead.

F. A. HAGNAUER, Monticello, Jefferson County :

Besides myself there are only two parties in this county that have real vineyards, the one nearly one acre and the other two acres in extent. Neither of them have yet made wine; they sold the grapes or used them for family purposes. During the past four years I have been planting grapevines; the most part of the White Scuppernong, and  $1\frac{1}{2}$  acres in northern kinds, altogether covering an area of about 9 acres, part of which will come into bearing this year; only one-half acre of Scuppernongs (old vines) gave, as yet, an accountable yield, 123 gallons of wine. I intend to increase the vineyard gradually to a much larger number of acres. Of others, I hear they intend going into it too.



J. C. BOYKIN, Orange Hill, Washington County :

There are no grapes cultivated here to any extent except the Scuppernong, and they are not cultivated for market. Nearly every farmer has a small vineyard and makes a few gallons of wine for home use; some few sell a few gallons occasionally, at \$2.00 per gallon. The Scuppernong grows fine and bears well; it seems to be suited to this soil and climate, and were suitable manufacturing establishments put up to manufacture wine, there would be no trouble to supply grapes in a few years. We would have large vineyards and be supplying a vast amount of good wine at very low prices, and the producer would be greatly remunerated, as we can grow such great quantities with so little trouble and expense.

#### GEORGIA.

GUGIE BOURQUIN, Savannah, Chatham County :

There are only two persons engaged in wine-making in this county; the vines are all Scuppernong and young; had about a half crop in 1880. There are several other vineyards for market purposes; no account taken of grapes raised. Have paid much attention to grape culture for the past thirty years; find only two varieties reliable (except the Scuppernong, which will not do for a table grape) in this section; have had these two varieties in our family for over a hundred years; even these rot on salt water, but come to perfection under sash; am now trying a grape said to be a native of Florida, and claimed to be free from everything. The Iona raised here is perfectly delicious, but lasts only for two or three years.

DAVID MILNE, Macon, Bibb County :

In this county the Norton's Virginia is the standard, and is the variety most esteemed for wine. The Concord is grown for the most part for the marketing of the fruit. About one-fourth of the area is in the Scuppernong, which makes a very delicious light wine, but by many not relished.

J. S. NEWMAN, Atlanta, Fulton County :

The soil of this county is admirably adapted to grape-growing—rolling and natural drainage perfect. The vines are healthy and almost entirely free from insects, mildew, &c. The interest in grape-growing is annually increasing.

F. E. BURKE, Americus, Sumter County :

There is, as yet, no such industry as wine-making, though our people are discussing its importance and profit. Nearly every family has one or more vines of the Scuppernong, white or black, variety, and nearly all make wine for their own use. This Scuppernong variety is superior to any, as it *never* fails to yield a fine crop; is not troubled by any disease or insect; requires no pruning if ample arborage is provided, and lives to an unknown age, and does quite as well as when young. Vines are known, now, to be over a hundred years old, and the writer has a friend who made 60 gallons of wine from *one vine*. There is a variety of this grape known here as the Flowers grape, black, large as a minie ball, grows in thick clusters, and is the most prolific and of highest flavor, and produces the richest wine of any. Some of our people are speaking of going into the wine culture, and estimate that they can secure 1,000 gallons per acre. There was a vineyard of about 2½ acres here, dilapidated and neglected, from which one of our citizens made 1,800 gallons of wine one year, but the vineyard belonged to an estate, was neglected, and destroyed by cattle. Our land and climate is well suited for wine culture, and the Scuppernong does better nowhere than here. The ordinary varieties of grape are but little grown here. They might do well. We have a wild grape all through our forests, in addition to the Bullace and Muscadine, species of the black Scuppernong, all of which yield finely flavored and scented wine.

W. W. ANDERSON, Forsyth, Monroe County :

Concord is the most reliable of 30 to 40 varieties tested. Clinton and Herbemont fine for wine some years; five or six vines were greatly troubled with an insect that punctured the vine, usually near a joint. The vine would scale up and seem to die in spots during the growing season, and die out altogether by fall. Manufacture of wine little understood; information on the practical operation badly needed.

MACON WANTEN, Warthen, Washington County :

Grapes cultivated in this county only in gardens, for table use. I understand that in southern section of our county some of the citizens are starting vineyards, I think not with a view of wine, however, but to furnish early grapes for market. Grapes do well with us. Scuppernong, Concord, Devereaux are the principal cultivated varieties, and succeed well. *Cotton is the mania here now.* Our lowlands, contiguous to our rivers and creeks, are well adapted to grape culture. The Muscadine (or black Scuppernong) grows wild and in great profusion in our swamps and forests, and make a very superior wine. They are very sweet.

WM. J. ANDERSON, Fort Valley, Houston County:

I will state that the principal wine grape raised in this county for wine is the Scuppernong, and but a small portion of the grapes raised in the county are made into wine. There are quite a variety of grapes grown in the county besides the Scuppernong; Concord, Delaware, Warrenton, Madeira, and many others, which are raised principally for home use. I made about 100 gallons a year; shall in the future make more. Grape-growing is increasing in interest, and I have no doubt will be gone into generally. In Cuthbert, Randolph County, a wine company is organized with \$10,000 capital, with the privilege of increasing to \$100,000. In or near Hawkinsville, Pulaski County, a private company has gone into the grape culture and wine making, and are succeeding well; and a wine company has been organized in Atlanta, Fulton County, with a capital of \$100,000; so you see it will soon grow to be of considerable interest in this State. In Southeast and Southwest Georgia, the Scuppernong is the leading grape, most prolific, long lived, and a constant bearer; a splendid wine grape.

J. E. SMITH, Hatcher Station, Quitman County:

The enterprise of wine-making in our county has recently received much interest and a new impetus as the wine manufactory in our neighboring county advances towards completion. This is destined largely to increase the growth of grapes in our county, especially the Scuppernong, which variety succeeds so well on our soil.

W. W. WOODRUFF, Griffin, Spaulding County:

The soil and climate of this locality seem to be well adapted to successful grape culture, as the grapes when matured are rich in saccharine matter, giving a wine with good body; our soil, a dark sandy loam, good drainage, with very pure air, being 1,000 feet in altitude. We can produce the grapes at less than half the cost of those grown in Ohio, and if skilled wine-makers with capital would locate in Middle Georgia we would soon see an immense acreage in grapes.

A. A. FLETCHER, Marietta, Cobb County:

There is no attention paid to the cultivation of grapes in this county; a few only are grown for family use. I do not think the soil and climate is adapted to grape culture, except for the native and Scuppernong variety; blight and rot seem to prevent ripening.

WILLIAM J. GOSS, Harmony Grove, Jackson County:

Our soil and climate, so far as tested, is well suited to grape culture, and no doubt most any hardy variety would do well. Scuppernong, Concord, Martha, and various other varieties are doing well here, where tested, but no one plants except for eating purposes, &c. I would be glad if you would send me a few vines of new varieties to make a test. My land is a gravelly gray, and a few vines, noted above, have commenced bearing and are doing well.

C. W. SEIDELL, Hartwell, Hart County:

This county is very favorable for the production of grapes, and all that is lacking is some one to come here and take hold of it. The soil here is generally a sandy loam, and well adapted to the cultivation of grapes.

GEO. T. HARRISON, Savannah, Chatham County:

The soil of this county being sandy loam, is well adapted to the healthy and vigorous growth of the Scuppernong. This grape is planted well-nigh to the exclusion of other varieties, it being a steady bearer and free from disease.

O. S. BENTLEY, Gainesville, Hall County:

This is a fine grape county and might be made very profitable. The best varieties are Concord, Martha, Norton's Virginia, Hartford Prolific, Delaware, and Scuppernong.

HOLLIS BELK, Buena Vista, Marion County:

In regard to grape culture I do not think that any person in the county has made it a specialty; I made a move in that direction, but I have been disappointed in finding market for the wine after it was made. I have a vineyard of 4 acres in the Eldorado grape, a seedling of the Scuppernong. I have a wire trellis over the entire piece of ground. The vines are enormously productive, and the grapes are larger, with a thinner skin and smaller pulp than the Scuppernong, and make a superior wine, and does not require as much sugar in its manufacture, and also more wine to the bushel of grapes. I think that when the vines cover all the trellis they will make 1,000 gallons to the acre. They can be gathered very rapidly by stretching a large sheet under the vines, and with a stout stick jar off the grapes; in this way 2 hands could easily gather 100 bushels in a day.



D. W. RAINY, Ellaville, Schley County :

This county is admirably adapted to the culture of the Scuppernong grape, though it have not been cultivated to any extent yet. There are but few vines ten years old, but they prove satisfactorily that grapes can be successfully grown in this section. The Scuppernong is the most hardy grape for this section.

W. C. RICHARDSON, Dalton, Whitfield County :

Some thirty years ago there were three or four vineyards planted in this county, and preparation made for manufacturing wine; but none was made, and the vineyards all abandoned. Later a good many of our people have planted the black, red, and yellow Scuppernong grape for family use, which have done well, and from which some little wine has been made. We have no doubt now that grapes would do well on our highest elevations.

#### ILLINOIS.

J. R. GASTON, Normal, McLean County :

The Concord grape is the principal one cultivated here. I have experimented with several of the new varieties, but with poor success. Grapes are only grown in this township for table use. Our locality and soil is not suited to grape culture as a business. We occasionally get some fair table grapes; the past season they were very imperfect. We had a warm, wet spell the first of June, which caused them to drop off. Concord the worst of any; Hartford, Ives, Champagne not so much; Salem and Delaware are worthless.

P. A. BONVALLET, Belle Park, Kankakee County :

We have been very much deceived in engaging in the business of wine-making, having been induced to do so by the United States Government reports. And when on the eve of success the government put a bar in our way in forcing dealers of native wines to take wholesale liquor dealers' licenses, so putting our products on the same footing with corn whisky, as if it was not enough for us to work and experiment for 10 to 15 years and spend, like we did, some \$12,000 before arriving at a satisfactory result. This is not just. Besides, the licensed dealers act as a monopoly, cutting down the price of native wines to the lowest, while they go on the market and buy the poorest and cheapest grapes, making an adulterated article which they sell for imported wines, while the vintners are obliged to submit to their starvation prices. For if I put the average price of wine at \$1 per gallon, it is being sold at that price in the neighborhood, but in Chicago it is sold for 40 to 50 cents per gallon wholesale, and the same wine being sold by the dealers at not less than \$1 to \$2 per gallon. Although by planting grapes we give value to a section of country 40 by 15 miles, we are also threatened by temperance advocates, who want to put wine on the same footing as whisky.

E. C. HATHEWAY, Ottawa, La Salle County :

Thus far the Concord is the most reliable, as well as the most hardy and productive grape we have in this locality *for all soils*. Delaware for heavy clay and prairie soils; Catawba discarded on account of ravages of phylloxera; Rogers's hybrids of no value except for amateurs.

TYLER MCWHORTER, Aledo, Mercer County :

Grapes are extensively grown for table use. Scarcely a farmer's home can be found that has not a piece of ground appropriated to the Concord grape. This is the only variety in general cultivation, though some amateurs are giving attention to many new varieties.

JOHN BALSIGER, Highland, Madison County :

In a few vineyards the crop of Concord was again considerably injured by rot; but then other varieties, as, for instance, the Norton's Virginia, produced an uncommonly large yield. In this part of the county (southeast) the largest part of the crop is made up into wine; but in the other parts, as the northwestern, the fruit is mostly sold in the markets or shipped to other places, principally north. The most of the Concord was sold for less than the above-mentioned price, but other varieties were higher. When the wine is ripe and clear, it sells, of course, for a higher price than the must. As the summer was rather dry the crop was better than commonly.

L. R. BANCROFT, Pontiac, Livingston County :

The Concord is the only grape successfully cultivated here; they are sold for family use, canning, &c.; the surplus, if any, is shipped to the Chicago market. They generally net the seller 3 cents per pound. Concord, planted 8 by 8 feet and trained (tied) to stakes, which is the most common practice here, will yield from 3 to 4 tons per acre;

planted 8 by 12 feet, and trained to trellis, will yield from 4 to 5 tons. My experience is in favor of the trellis; think it the cheapest in the long run.

JOHN GORDON, Jacksonville, Morgan County:

When sugar is used, say 2 pounds of A sugar to one gallon, wine sells at \$1 per gallon. For the last year I may overestimate the quantity made into wine, as there is not near the demand for it as heretofore, or rather there is so much made the price is thought too small to pay. The Concord is the variety mostly cultivated, and always produces more or less grapes. The vineyards in our county are mostly small; some may reach 10 acres, and from that down to 50 vines. There is a gradual increase in the production and planting of vineyards.

E. T. MILLER, Jacksonville, Morgan County:

The Concord is the only grape grown for profit in Morgan County. A few Delaware and Catawba grapes are grown for table use. One-half of the wine made in Morgan County has 10 per cent. of sugar added to it.

L. T. LINNELL, Cobden, Union County:

Years ago we used to raise a large quantity of grapes here. Probably 100 acres in this township, principally Concords. But generally the rot set in with third crop, so that growers have given it up almost entirely, scarcely any being raised for market. The Norton's Virginia seedling is prolific here and does not rot. Our fruit men begin to talk of planting them largely.

C. B. OSTRANDER, M. D., Lodemia, Livingston County:

The general grape grown in this county is Concord, which makes a very poor quality of wine at best. Twenty per cent. of the grapes grown here are Delaware, that yields a first class wine, worth \$4 per gallon in the wholesale market.

F. BUECKMAN, Chester, Randolph County:

The Virginia seedling grape is mostly raised here; it is clear of rot, and produces a good crop every season. We are taking up the Concord, as it rots badly. I am experimenting with the Elvira, which promises well and makes a splendid white wine. The Cynthiana is a regular-bearing grape, and makes the best red wine in this country; it will stand rich soil, and produces from 500 to 800 gallons per acre. Last season has been the best for grape-raising for the last ten years. Our soil is a deep yellow clay, based on limestone.

JOSIAH DAWES, Albion, Edwards County:

But few grapes grown in this county, as there is no market for the fruit. Grapes do well here when lime and bonedust is applied to soil. Ives seedling and Concord do the best of any variety grown.

J. V. COTTA, Lanark, Carroll County:

Grapes have as yet only been planted on a small scale in this county (Carroll), not exceeding 10 acres. There is no wine manufactured for commercial purposes, the fruit being used by the planters' families, and any surplus marketed in the towns of the county where an average price of about 2½ cents per pound was realized. The Concord still takes the lead and gives general satisfaction. Martha is also doing well and is rapidly gaining favor as a good, hardy white grape. Some of the newer varieties, such as Brighton, Lady, Moore's Early, and others are being tested; they are generally promising, but the vines, not having attained sufficient age for full bearing capacity, it is too early to warrant a decided opinion as to their ultimate value here. Rogers's hybrids are not coming up to the expectations entertained for them, being less hardy than pure native varieties; their fruiting capacity is often interfered with by climatic influences. The Clinton has nearly disappeared from this county, having been discarded on account of the ravages of the leaf-gall louse and mildew, which for a number of years past rendered this variety worthless. Neither of these diseases has as yet attacked the Concord and Martha.

EMIL BAXTER, Nauvoo, Hancock County:

The wine business for table uses—claret wines—is increasing, and people are setting out more vineyards, principally Concord, Ives, and Elvira grapes.

JAMES WILSON, Centralia, Marion County:

Some efforts were made a few years ago to cultivate the grape in this county, but proving unprofitable it was abandoned, and at this time there is no attention paid to it except for home consumption. I doubt if there is so much as 1 acre on a farm in the county. The cause of the failure, or rather causes, are, 1st. The soil is not generally adapted to the growth of the grape, the subsoil being hard-pan. 2d. The summers are too hot, and very often too dry. 3d. The grape is very subject to rot before fully grown. But little experiment has been made in wine-making.

J. M. KELLY, Duquoin, Perry County :

This is not a good climate for grapes. June sun and rain blight them. Concord is the principal vine here ; Ives, I think, suits the climate best, but the culture is running down. The high lands south of here, in this State, are fine for grapes—Pulaski, Union, and Jackson Counties.

HENRY A. DIETZEL, Carlyle, Clinton County :

My experience in grape-growing and wine-making extends to ten years. I found that the Concord, Isabella, Catawba, Ives Seedling, Hartford Prolific, and many others, will bear abundantly in their prime of life, say from three to six years old ; afterwards, the dry rot and the rot just before maturity of the berry destroy, sometimes, the whole crop ; very severe winters and late frosts in March and April, even May, very often destroy the vines or blossoms, and the low price of our common wines, 35 to 75 cents per gallon wholesale, is another cause to make the business unprofitable. My vineyard was about  $7\frac{1}{2}$  acres ; after many entire failures I concluded to give it up, and am growing wheat, corn, &c., instead. Other parties in this county quitted the business also. I can say that I harvested one year over 100 gallons per acre ; take to this three failures (more or less), and the average for four years will not be more than about 25 to 30 gallons. In the above number of acres there is included probably 50 to 60 quarter and half acres, &c., principally for family use, of which I believe about 50 to 75 per cent. used for wine-making for home consumption.

B. F. JOHNSON, Champaign, Champaign County :

Grapes are grown here almost exclusively for the home and the Chicago markets, but on account of the depredations of birds (of the thrush tribe mostly) they are generally picked weeks before they are ripe to save them. Consequently little or no wine is made, and that little has to be gallized by the addition of sugar and sometimes water. It is poor stuff without exception. Of the varieties grown here, the Concord leads by as much as 85 or 90 per cent. Next, perhaps, after that is the Ives. After a few crops, unless the year happens to be hot and dry, mildew attacks the leaves and the grapes rot, taking half to two-thirds the crop. These diseases are worse in hot and wet and cool and wet seasons. Some think both diseases to be the result of malnutrition ; and, in the case of the black prairie soil, too much humus and nitrogen entering into the plant-food material, and too little again of material like the salts of potash, phosphorus, and lime. I conclude from my own observations that Dr. McMurtrie's notes concerning grape rot and mildew (pp. 81 to 89, Report 1877) come nearer to being the right ones than any I have seen.

O. B. GALUSHA, Morris, Grundy County :

The marketable clusters are sold as fruit. No one grows grapes exclusively for wine-making.

JOHN BALSIGER, Highland, Madison County :

There were some vineyards in which the rot caused some loss, more or less, particularly on the Concord. One of the best yielders last year proved to be the Norton's Virginia seedling. With me it yielded rather over one gallon per vine, and was perfectly healthy. But it must be said that the previous season it yielded nothing at all, the buds being killed by the cold of the preceding winter. In the part of the county where I live, the largest part of the crop is used for wine-making. In the western part, near Saint Louis or other markets, nearly the whole crop is sold for eating or shipping to other places, particularly north. Generally (but with many exceptions) the vine-growers of American birth prefer selling their fruit, as they do not understand the manufacture of wine ; German or French growers, particularly those at a distance from a market as they are here, think it more advantageous to press their grapes.

E. F. SIEKMEYER, Bremen, Randolph County :

Virginia seedling and Concord are doing well in this county ; but other varieties will not do so well. The year 1880 was one of the best grape years that we have had for a long time. The best location for vines for wine production is the southeast hill-side.

GEORGE A. THOMAS, Toulon, Stark County :

Grape culture is only followed here for family use. The marketing is in its infancy. Concord is the favorite for hardiness and all uses. More attention is being given every year to the cultivation of this important fruit.

C. B. PADDOCK, Albany, Whitesides County :

The grapes grown in this county are almost entirely of the Concord variety, and are grown for market without reference to wine, no wine being made in the county that I am aware of.

W. W. PATCH, Galesburgh, Knox County :

The grape crop in this county the past season was not good for wine-making. The extreme dry weather after the 1st of July caused the grapes to be very wormy, and they yielded but little, if any, over half of an average crop of good wine. I suppose there are about 25 acres of grapes in this county, and I think my own crop about a fair average of the whole. I know of no one except myself that put all or any considerable portion of their crop into wine, but as a rule the grapes are sent to market as soon as they are eatable.

W. H. PORTERFIELD, Mount Erie, Wayne County :

Grape culture is a small affair in this part of the country. In this county, so far as I have any knowledge, scarcely amounts to two acres; it amounts to this only. Nearly every farmer and householder has a few vines, from half dozen to a few hundred, and I know of but few that use the grape for making wine, and they only in a small way. I am not able to give you the weight per acre, nor the proportion made into wine, and neither the average yield in gallons per acre. Those few that make it and sell it sell at about \$1.25 per gallon. I cannot see why there is not more interest taken in grape culture in this part. Vines seem to do well, and with little attention in pruning and caring for them they seem to produce heavy crops, and if vines are cared for properly there is very little or no trouble about their mildewing or rotting.

JAMES E. STARR, Elsay, Jersey County :

All wines are now made without "gallizing." Concord grown almost exclusively, though it has for several seasons shown strong tendency to rot. The culture of the grape for wine for profit is not now looked upon favorably. The growing of a better wine grape may change this feeling, but while cereals pay so well but little attention will be given to grapes or fruit. Lands are cheap, and labor finds profitable employment on a larger scale than wine-growing offers.

L. L. LAKE, M. D., Belvidere, Boone County :

Have experimented with over 100 varieties in the last twenty-five years. I have discarded almost all the pure natives, such as Concord, Hartford, Tallman, and Clinton. I consider them as abominations. There are a few pure natives, such as Delaware and Prentice and Wyoming, that I can tolerate. While Concorde can be sold in this city for only 3 cents per pound, my hybrids, such as Agawam, Rogers's 15, and his Nos. 9, 41, 43, and 44, and Underhill's hybrid, the Black Eagle, sold for 8 and 10 cents.

EDWARD ROESSLER, Shelbyville, Shelby County :

I cut from 50 vine stalks (one-tenth of an acre) last fall 1,000 pounds, and made 60 gallons of wine, or 17 1/2 pounds to the gallon. They were Concord and 4 years old. The vines were a mass of clusters. It was an astonishingly heavy crop. About 90 per cent. of our vines are Concord. They are preferred over all other varieties on account of their hardiness and bearing qualities. The greater proportion of our grapes are consumed in kitchen and table use, and this is only our beginning. Seven years ago the first wine was made in our county; last year 10,000 gallons were made.

GEORGE C. EISENMEGER, Mascoutah, Saint Clair County :

As a business grape-culture and wine-making is an entire failure so far as this State and locality are concerned. The finer and better kinds of grapes, such as Catawba, Rulander, Taylor, Bullitt, and Herbemont, can't be grown here, and the Concord is too prolific and hence worthless as a wine grape.

J. B. CLARK, Onarga, Iroquois County :

Grapes do not do very well here; some years they nearly all rot. Last summer was a very poor year for grapes. The most of those raised are shipped to Chicago, or sold through the country for family use. Those that have vineyards do not lay out much work on them, the price of grapes is so low that it does not pay. The average price is about 2 cents per pound.

R. W. HUNT, Galesburgh, Knox County :

The principal crop is of the Concord variety. All others require too much care, and are too uncertain in results in consequence of mildew and blight. Delaware does not perfect a crop oftener than once in three years. The market is fully supplied with Concord, selling the last three years as low as 3 and even 2 1/2 cents per pound. At these figures the growers make but little, and the tendency is not to plant any more, except for family consumption. Wine is not very readily sold; if it was the price of grapes might be controlled.

SAMUEL ALBRIGHT, Damascus, Stephenson County :

I think the Concord is the hardiest and largest bearer of any variety for our climate. But I do not like the color and flavor of Concord alone for wine. But Concord mixed

with the Clinton makes a wine of good color and flavor. The Concord mixed in the proportion of about one-half with the wine grape takes some of the acid, and after it ferments it is not near so sour as the wine grape alone. They ripen at about the same time in our soil and climate.

#### INDIANA.

JNO. W. FURNAS, Indianapolis, Marion County:

I am inclined to think that on all lands with a clay subsoil (unless naturally drained) it will not pay to attempt to raise grapes for any purpose.

THOS. J. WARD, Saint Mary's, Vigo County:

Many vineyards in this county have been dug up and destroyed in the last four years on account of the very low price of grapes in the markets.

J. F. SOULÉ, Terre Haute, Vigo County:

Crop very uncertain on account of rot. Cold winters cut off crop of Catawba. Concord is the variety most largely planted.

CHRISTIAN SHIRLEY, Washington County:

Rot is prevented by sprinkling salt on the ground around the vines and over the roots.

J. F. MCCARTHY, Valparaiso, Porter County:

Quantity of wine made this season was 2,000 gallons.

MARTIN HEINEMAN, Valparaiso, Porter County:

The grape crop in this county has been almost an entire failure for the last three seasons, owing to frost in spring of 1878 and excessive rainstorms at the time of blossom in 1879 and 1880, in consequence of which some vineyards are being abandoned.

CALVIN FLETCHER, Spencer, Owen County:

While I have no commercial data for any of the above, I give, as you request, my studious estimate, based on my own experience, knowledge, and conference with my neighbors. The depredations of insects, the exigencies of seasons, the semi-paralysis pervading horticulturists and vine-growers arising therefrom causes me to wonder at any attempt to overcome the above-named casualties. "The hope that springs eternal," &c., is the only explanation. Skilled Germans accomplish more than others, but their children fail as we natives do. Nature affords us the wild grape two years out of five, and man has only equalled that proportion by use of such second-quality grapes as Concord, Clinton, and Ives seedling. I have 50 most approved varieties, and indorse only the above.

STEPHEN BURNET, Vincennes, Knox County:

The largest vineyard in the county comprises 18 acres. The others are from 1 to 8 acres, and the fruit mostly used for home use and home market, a part only being shipped to other points. The crop for 1880 is the best that we have had for several years, being free from mildew and rot, diseases which have seriously affected the crop for a number of years past. Quite a number of old vineyards have been grubbed up and the ground used for other purposes.

JOHN D. SUMMERS, Winchester, Randolph County:

Varieties used most: Hartford, Concord, Delaware, and Rogers's family.

DANIEL TRAFELET, Vevay, Switzerland County:

Most all property owners in towns and farmers throughout the county have arbors and trellises, who raise grapes in that way, which are used various ways. There were to my knowledge about 15 acres of grape-vines dug up within the last few years, these being the Catawba, a grape which makes excellent wine, but the crops fail on account of the rot. But we have now the Ives seedling, Concord, Delaware, and other kinds, which yield well in this vicinity. Formerly Switzerland County was one of the finest grape-growing counties in the United States. As early as the year 1800 the Swiss, a people noted for raising good wines, settled this place and planted many vineyards, but the old settlers have died off and so have many of the vineyards.

DANIEL BEIL, Rolling Prairie, La Porte County:

My grapes were all shipped to Chicago, and netted me 4 cents per pound. I cannot make any estimate for the county, only for my own crop. It was the best crop that I have raised in the last ten years.

W. H. RAGAN, Clayton, Hendricks County :

Grapes are not grown in this county, or, indeed, in this portion of the State for wine-making; indeed, they are grown only to a limited extent for commercial purposes.

A. F. MARTIN & SONS, Delphi, Carroll County :

The amount of grapes raised in the county does not admit of much wine-making; they are raised more for market. We, A. F. Martin & Sons, used to make about all the wine made in the county, but we have quit wine-making. We made from 300 to 700 gallons per year, but owing to the uncertainty of the crop we do not even tend to grapes; in fact we have taken up about all of our vines. Good crops of grapes set on the vines, but just as they begin to turn they fall off, leaving sometimes a half bunch and sometimes but two or three grapes on a bunch. Old vineyards are more uncertain than younger vines; seems to be caused by the roots in some way. A vine trimmed and reset will bear good fruit.

A. F. OSTABROOK, Sullivan, Sullivan County :

The above includes only what is laid out in vineyards, generally in half-acre or acre lots. Nearly every cottage has annexed to yard or garden a few grape-vines, sufficient for use of family, which, if added to the above, would double the estimate. Grapes do not succeed well in this county, especially such varieties as produce good wine. The Concord is principally cultivated and is not a wine producer.

GEORGE OMODE, Vincennes, Knox County :

The cause of the yield being small is that the greater portion of the vines are Concord, and after they are five years old the grapes all rot. Norton's Virginia seedling and Ives are the only varieties which will do to depend on.

VICTOR KANZIE, New Albany, Floyd County :

I think about 1,500 gallons of wine were made in this county from Concord grapes, and sold from 60 to 80 cents per gallon. A few Catawba vines are cultivated for table use.

HORACE E. JAMES, Rensselaer, Jasper County :

Concords yield handsomely, and Delawares are good when protected in winter.

J. N. ARMANTROUT, Frankfort, Clinton County :

It is proper to say in this connection that in this county we have no vineyards planted in view of wine-making as a business. But almost every farmer keeps a few vines to raise grapes for family use, both as dessert and for culinary purposes. The Concord and kindred hardy grapes do well. Those of tenderer growth are not found to be profitable. We have also native grapes of the *Vitis cestralis*, and the *Vitis cordifolia*, which are suffered to grow only in the wild state.

NELSON SLATER, Lagrange, Lagrange County :

Within the last five years considerable attention has been given to the culture of grapes, but little wine has been made. The better wine grapes do not succeed here, the winters are too severe. The Concord and the Champion are the only ones that I have made a success of. I sell my grapes by the pound, as indeed nearly all grape-growers in this county do. We get from 3 to 5 cents per pound.

VALENTINE HAMMAN, Millwood, Kosciusko County :

Grape-raising in this county is a success, but wine-making is a failure, the juice requiring too much sugar of the best quality, thus bringing the cost of good wine above its market value.

SYLVESTER JOHNSON, president Indiana Horticultural Society, Irvington, Marion County :

For the last few years grapes have rotted badly, especially the Concord, and worse when the season is wet and the vines old. Thorough underdraining and cultivation seem to be the best preventives against rot.

JOHN O. GREENE, New Albany, Floyd County :

Twenty years ago the number of acres in grapes was not less than 20. The want of a proper experience in grape culture caused so many failures that a false impression of the adaptability of our climate and soil for that purpose became so general that but little attention has been paid to it since. But within the last three years success has been attained by three or four parties on elevated localities, and such as face the southeast. And as we have about 5,000 acres of such locations in this county, there is certainly a fine prospect for this business to be conducted on an extensive scale in the future. The Catawba wine is worth about \$1.50 per gallon, and is of best quality.



T. A. R. EATON, Bluffton, Wells County :

I planted the first vineyard in this county, about fifteen years ago; had good success for two or three years, then rot destroyed the vineyard. I have planted new vineyards, but have had the same results. This year, 1880, some vineyards have not averaged a single healthy bunch to the acre on account of rot. I have a vineyard of 7 acres, mostly Concord and Martha; have tried many remedies thoroughly, and all have failed. Shall cut all down this spring except 3 acres, upon which I will try sacking the bunches; if this fails will cut all down, as it does not pay to grow grapes unless a remedy can be found for rot and mildew.

RICHARD M. J. COX, Brownstown, Jackson County :

Parties are engaged in the grape culture in the northwestern and eastern parts of our county, on high clay soil, while a few of us are in the central portion on high sand land. The sand is ten days earlier, but the clay production is heavier, with less sugar, with solid pulp, better to keep, but not so good for wine as the sand production.

S. J. ANDERSON, Morgantown, Morgan County :

There would probably be 3,000 pounds to the acre if the grapes did not mildew or rot; we cannot raise any Catawba here; our principal grape is the Ives seedling, which is not a very good wine grape; the next best are the Concord and Iona. We are experimenting with the Martha, Delaware, Hartford, Clinton, Virginia seedling, &c., but I do not think any of them will prove to be a good wine grape. Our county certainly would be a good grape-growing district if the proper interest was taken with it.

ELISHA JONES, Princeton, Gibson County :

I recommend fall trimming for the reason that it prevents winter killing of the vines, and also causes the grapes to ripen one week earlier than spring trimming. October is the time recommended, as all the unripe wood is removed and not so much exposed to the frost.

GEORGE MORRIS, Lewisville, Henry County :

Fully half the crop rotted; but for the rot, would have had at least 6,000 pounds to the acre.

G. D. MITCHELL, Petersburg, Pike County :

Most of our people grow grapes in their gardens. The Concord and some other varieties do well, and seldom fail either to bear or mature fine grapes.

SAMUEL McLEAN, Marion, Grant County :

Grapes are as easily produced as corn in this vicinity, and the amount produced is dependent on the demand. There is but one man in the county who manufactures wine, and he has no special facilities for doing so, and yet the product is spoken highly of by connoisseurs.

JOHN BOLL, South Gate, Franklin County :

We being situated on a very high point in Indiana, the wine culture is not met with to any extent; the few vines that are in the gardens and about the dwellings yield abundant crops, if not affected by mildew or rot, the latter of which makes havoc among them. I estimate that every grapevine yields one gallon on an average, when there is a wine year. Out of thirteen townships only four raise wine, which is consumed in the saloons of neighborhood. Many of the farmers dig out their few vines, plant peach trees instead of them, which are of better profit here.

#### IOWA.

Miss CARRIE C. LANE, Charles City, Floyd County :

Very few farms have any vineyard at all, and those which have only furnish fruit for home consumption. None are manufactured into wines. Our climate is too uneven to admit of profitable culture, either for the purpose of wine-making or shipping.

C. N. EGGERT, Iowa City, Johnson County :

The greatest drawback to viniculture hereabouts is the excessive cheapness of grapes and wine. In my estimate of 100 to 150 acres I am not at all certain whether the many small patches are accounted for that one finds on nearly every farm and village property. From these smaller plots a large quantity of grapes is thrown on the market and sold at any price. Hence, no more than 1 cent per pound could be realized for the best ripe Concord grapes. The Concord grape alone is to be mentioned as of any consequence hereabouts, for although the Ives and Rogers' 15 and 4, do well, they cannot be compared with the Concord in the adaptation to the wants of our people. Perhaps instead of estimating numbers of acres at from 100 to 150, I might state

double the number as more nearly right, but I lack precise data to justify me in saying so.

W. W. MOORE, Gillett's Grove, Clay County :

The Concord grape has to have winter protection, consequently cannot be grown largely. The wild grape does well on bottom-land, but fails on upland. The growth of tame varieties is not encouraging.

EDWIN FLINT, Mason City, Cerro Gordo County :

The Clinton, Catawba, Isabella, Muscadine, Hartford Prolific, Diana, Eumelan, Delaware, and Concord, all make a vigorous growth of vine. The Catawba and Isabella do not in ordinary seasons ripen here. The rest generally ripen. The Clinton is badly affected with the mildew; the rest are free from it. Insects do not to any considerable extent injure either. All the vines need protection in the winter. This is done by covering them with earth or prairie hay; I prefer the latter, as the hay is without seed; mice do not injure the vines. The best grapes for this section are the Delaware and the Concord, and the latter the best. The Concord raised here has, I think, a finer flavor than that grown further south. It makes an excellent wine; white, with a slightly golden tinge. I think a superior champagne might be made from the Concord grape of Northern Iowa.

G. P. ARNOLD, Garden Grove, Decatur County :

Concord is almost exclusively cultivated; and in no single case in this county is wine produced for market. Wine is made solely for domestic uses, and in small quantities. No data were at hand to determine the production per acre, as it is not grown for market. My estimate of amount planted is, viz, one acre per section of 640 acres, which is nearly the thing. Catawba was planted to some extent twenty-five years ago, but failed to stand our rigorous climate. Have seen some specimens of Rogers that were good, but they have no general distribution. Concord is perfectly hardy, and produces largely when carefully handled.

L. A. WILLIAMS, Glenwood, Mills County :

The Concord grape is almost exclusively grown here, and there are probably 20 per cent. of our farmers that grow about a dozen vines in their gardens for home use. I have about 4 acres in vineyard, and have about 15 different varieties, but mostly Concord. One other vineyard has 2 acres; the 7 or 8 other vineyards make up the remaining 4 acres from which any marketing is done. This soil, being thoroughly drained, is well adapted for growing all hardy varieties, and four or five year old Concord vines under proper care will produce 20 to 25 pounds each.

J. GREGORY, Ames, Story County :

I am a wine manufacturer, but do not cultivate any grapes, as I find the native grapes (in which the woods of Central and Western Iowa abound, and from which they can be obtained as cheap as they could be harvested from a vineyard, the price ranging from  $1\frac{1}{2}$  to 2 cents per pound) to be far superior for the purpose of wine-making to any cultivated grapes in Iowa, making a wine of higher alcoholic per cent., richer in color, more delicious in flavor, and maturing quicker than any other kind. Wine made in September is ready for the market in January, thus enabling the manufacturer to get quick returns from his investment. The average amount of wine produced from a bushel of grapes is about 5 gallons. The variety of grapes from which I manufacture my wine is known as *Vitis cordifolia* and *V. riparia*, or common blue grape. The color of the wine is a brilliant dark red, and in quality considered by those who use it equal to the imported article, and finds ready sale when placed upon the market; as an evidence of its worth, all the wine I manufactured last season is already disposed of.

NATHAN LITTLER, Washington, Washington County :

I have one-fourth of an acre of Concord grapes which have been bearing eight years without failing since coming to maturity. My average yield has equaled if not exceeded 2,000 pounds per annum, which would make a yield of 8,000 pounds per acre. Mine are probably over an average of the yield in the county, say 10 per cent. I have raised as high as 4,000 pounds off my one-fourth acre; never less than 1,000 pounds, and that small crop only one year. Last year my yield off of one-fourth acre was about 2,500 pounds. Grape culture is not extensive in this county, although the crop is about as sure for Concord (the only kind that stands our climate well) as for corn or oats or any other never-failing crop. There are no large vineyards. None over 2 or 3 acres, and but few as large as one-fourth of an acre, our people generally raising only what is needed for home use. The outside demand has not been sufficient as yet for any considerable export trade. Grapes have sold for the last two or three years here for local supply principally, and at prices from  $1\frac{1}{2}$  to 3 cents per pound.



R. G. ORWIG, Des Moines, Polk County :

The Concord is the only grape cultivated for general crop, and yields abundantly with little care. Grapes are carried from door to door, and are sold at retail by single pound at 2 cents per pound. Vineyards are neglected in this county because there is no market here for the crop ; i. e., the supply of grapes is beyond the demand for ordinary use, and but little wine is made.

#### KANSAS.

J. A. POFF, Russell, Russell County :

There is not a bearing grapevine in this county. Every effort has been made to raise grapes, but grasshoppers, drought, or some calamity overtook us and the vines destroyed. Vines of all kinds are a poor experiment here in Western Kansas.

G. W. MOSTELLER, Girard, Crawford County :

Dracut Amber is our most reliable grape. Grape-growing and wine-making are yet in their infancy.

J. HODGINS, Centralia, Nemaha County :

Grapes do well here ; no rot or mildew. The Concord is the favorite and leading variety. The annual expense of cultivation, &c., for an acre of grapes is about \$50.

R. E. LAWRENSON, Junction City, Davis County :

The Concord and Goethe do the best with me ; the latter yielded fully as good if not better than the former. Hartford and Ives do well. Clinton hardy, but leaves attacked by the gall louse renders it worthless ; otherwise, it is of excellent flavor and makes a good wine. The Goethe beat the Concord with me this year, being more prolific and bringing a better price. A very unusual thing here happened in the grapes (Concord) being marketable on the last of July, the Goethe only a few days later. Grapes sold from 10 to 4 cents per pound, the reason there is no wine to report. I have raised about 3,500 pounds of grapes on about 700 bearing vines on tolerably high land. My neighbor, about 50 feet lower, raised about 500 pounds on about 1,000 bearing vines ; caused by late frost, after the bunches had formed, which caught him and missed me.

Dr. J. STAYMAN, Leavenworth, Leavenworth County :

Our people are not well prepared for making wine, not having the proper cellars and conveniences, and the sale is limited. Consequently they sell most of their grapes in the market at about 2 to 2½ cents per pound, which will yield about \$200 per acre. Making the same into wine would yield about \$120 to \$150 an acre more. The quantity reported by the assessor was 8,483 gallons of wine made in this county this last season.

JOHN RICHEY, Galva, McPherson County :

A very large per cent. of the vines planted in this county are too young to produce a full crop ; and a very large per cent. of the fruit was destroyed by a bug, eating the bloom and the fruit when very small. I suppose it was the rose beetle ; and know of no remedy, save hand picking.

J. P. BROWN, Council Grove, Morris County :

Concord preferred by most persons. The quality is excellent. Seldom fails. Never mildews. Can expect a good crop the third year. The county is not well enough developed to justify one in giving much attention to this branch of horticulture.

O. N. WILLIAMS, Columbus, Cherokee County :

The vineyards are mostly of the Concord variety, and some seasons the whole crop rots. The Norton's Virginia and Cynthiana are the surest varieties that have been tested here, and are destined to be the leading varieties for wine in this locality.

J. N. INSLEY, Oskaloosa, Jefferson, County :

The Concord, Hartford Prolific, Clinton, and Delaware succeed admirably in the eastern half of Kansas, the limestone hillsides producing a luxuriant growth of wine and fruit. About the only enemy to the grape in this locality is mildew, caused by excessive rain in August and fore part of September.

B. D. SANDERSON, Girard, Crawford County :

The Concord and White Victory are the best varieties for this climate.

GEORGE W. ASHBY, Chanute, Neosho County :

Our country is comparatively new ; nearly all grapes have been planted in the last eight years. Little wine is yet made, but of good quality, and eagerly sought for. The prohibition law now going into force in the State of Kansas, will destroy the

traffic in wine here. Its manufacture in a domestic way may possibly continue for household purposes. Grape planting does not appear to be affected in anticipation of the law, as our people are largely increasing the number of their vines. Owners of vineyards will be likely to make a little wine for sacramental purposes.

L. M. TUTT, South Cedar, Jackson County :

Grapes of all kinds, and especially the hardiest varieties, do well here. The Concord, Clinton, and Hartford Prolific are among the principal varieties grown. The Concord is the standard and does well under almost any circumstances. Experienced grape growers are well satisfied with their experiments in grape culture, and think this section of country will compare favorably with some of the best grape growing districts in the country.

CHARLES STARK, Elk City, Montgomery County :

The Concord is thought to be the best grape for this climate. It is hardy, and yields well; not much subject to rot or mildew, is large and highly flavored, and makes a splendid wine. I have had some experience in wine-making of late; I allow the grapes to get thoroughly ripe, then bruise or mash them lightly, and let them stand about 24 hours in the shade. Press them out, and for sweet wine add one and a half pounds of white sugar to the gallon. Let it ferment together; in November draw the wine off in other vessels, and you will have a good wine. I made about fourteen barrels from four acres of grapes.

A. ELLIS, Elk City, Chautauqua County :

The Concord is conceded to be the grape for this climate. The Dracut Amber is a good grape, but not better or better flavored than the Concord. This latitude, or a strip of country 100 miles in width, from the Mississippi on the east to the Arkansas River on the west, seems to be the natural home of the Concord grape. It includes territory in Missouri, Arkansas, Kansas, and the Indian Territory. A large portion of the country is rough, broken, and rocky. The timber is low and scrubby, and in many places covered with grape vines; and hundreds of tons of grapes are annually found hanging on this brush; and long trains of wagons may be seen every fall loading with grapes for the market. These grapes are less than the Concord, and about the size of a grape known as the Fox grape, and are equally as sweet and rich as the Concord.

#### KENTUCKY.

THOMAS S. KENNEDY, Louisville, Jefferson County :

The kinds of grapes tried previous to 1860 in vineyard culture in this vicinity, such as the Isabella, Catawba, and Alexander, became so subject to the rot that the annual crops could not be relied on; and the vineyards, which embraced hundreds of acres, were totally abandoned. During the past twenty years such grapes as the Concord, Ives, Perkins, Venango, and other *Labrusca* kinds, have been cultivated with partial success, and are still relied on with other kinds of the other classes, such as Delaware, Norton's Virginia, &c., for both table use and marketing and for domestic wine. The large majority of vines however, now in cultivation, especially by amateurs and under garden culture, are of the newer varieties, being seedlings and hybrids, of which there are some one hundred different varieties; and which are being tested as to productiveness and hardiness, as well as good quality either for the table or for wine. It has been found that a variety, originating in Shelby County, Kentucky, and known as Taylor's Bullitt, has dry, wiry roots, that resist the attacks of the *Phylloxera vastatrix*. In consequence, a large demand has sprung up for cuttings for shipment to France, where these cuttings are used to make roots upon which to graft the European vine. The Taylor's Bullitt belongs to the *Riparia* class, and from its some seedlings have been obtained, such as Elvira, Black Taylor, and others, which promise to prove themselves to be our best and hardiest wine and table grapes.

J. W. CARRIER, Mackville, Washington County :

In regard to grape culture in this part of Kentucky, I state that I was the first one to plant a vineyard in Washington County. I first planted 4 acres of Catawbass. They bore four good, full crops, but afterwards commenced rotting; and since the first five crops have done but little good. But my Ives seedlings do well every season; do not rot. To succeed well with the Catawba here, you would have to transplant them about every seven years.

J. A. MCKEE & SON, Cynthiaana, Harrison County :

Grapes are grown extensively for table use, and many persons make a little wine and often of surprising quality. In former years I have raised and made wine of a very fine quality from Catawba, Clinton, and Delaware, with a small quantity of other grapes to mingle with them to produce certain results. Our soil is a dry limestone with an abundance of hot sunshine in August and September. All varieties ripen per-

fectly. We enjoyed grapes from early in July until Christmas the past season, and made seven different samples of wine, fruited forty select varieties of grapes, some of them not losing in comparison with French or California grapes when quality (concentrated essence) was considered.

K. GEIBEL, Sr., Henderson, Henderson County :

I find this climate too warm for wine grapes, the most of the varieties mature the early part of September and have to be cut. Virginia Seedling and Ives Seedling are the best producers for wine according to my experience; we have all the varieties that are grown, but find them mostly in garden spots. There are only five or six that have more than one-half acre planted in grapes. I have about three-fourths of an acre which produced this year near about five barrels; this was the best year we have had for several. Grapes were plentiful in most every garden where they had proper attention. Virginia and Ives Seedling make the strongest wine.

JOHN HARBISON, Russellville, Logan County :

Have had an experience of forty years in the cultivation of the grape in various States of the Union. I consider this locality, Southern Kentucky, as favorable for the grape, all things considered, as any portion of the Union. There seems to be an increasing interest manifested in the culture of the grape in this county. Consider Concord, Ives Seedling, Catawba, Norton's Virginia, and Delaware the choice varieties for this locality.

P. E. TOWNSEND, Adairville, Logan County :

The vintage of 1879 yielded me 250 gallons of wine per acre, and the vintage of 1880 yielded 550 gallons per acre. As a wine grape I would advise the cultivation of Concord, Ives Seedling, and Norton's Virginia.

J. B. CHAPMAN, Lebanon, Marion County :

There are but few vineyards in the county, but every garden is rich in grapes. The yield for 1880 was heavy, being about 7,500 pounds to the acre of first class fruit. The season was fine, rather a dry June, consequently no rot. Out of 50 varieties I think the Ives Seedling is the most reliable grape grown here.

STEPHEN NETHERCUTT, Grayson, Carter County :

Though there are but few grapes grown in this county it is nevertheless a fact that wherever the grape has been properly cultivated in the county they have flourished and done well, especially the Concord and Ives Seedling :

Dr. L. C. JEFFRIES, Side View, Montgomery County :

The culture of grapes in this county amounts only to a small number of vines. Those are badly reared and generally do but very little good. The people who raise them generally know nothing about trimming in winter or summer. There is not one person in this county that knows how to make a gallon of wine. Those who undertake it fail. They generally put about three pounds of sugar to one gallon of juice, let it ferment and call it wine; of course it is worthless.

The above is a fair sample of all the counties composing the "blue grass" part of our State. Outside of mules, horses, cattle, tobacco, hemp, hogs, and sheep our people know but little.

I have about 100 grapevines that I cultivate to the highest point, as to pruning, &c. They make me and my people an abundance to eat, but I have long since quit trying to make wine.

WILLIAM J. PARKER, Bedford, Trimble County :

When first planted the small vineyards of this county yielded very well, but for the last seven years they have fallen off both in wet and dry seasons, and none have matured, from what cause we do not know. My vineyard has been trimmed and cultivated under the direction of Germans, experienced in the culture of grapes, but with no success.

F. A. SMITH, Mumfordsville, Hart County :

But few grapes are grown in this county. I have some 300 vines in my garden, from which I usually make from 2 to 3 barrels of wine, and there are perhaps a dozen others who do the same. Mine are Concord, and they yield 7 gallons of wine to every 100 pounds of grapes.

J. A. BRIGGS, Bowling Green, Warren County :

For the last two or three years the rot has destroyed a large proportion of our crops, the Concord and Ives being less affected thereby than other varieties. Favored localities have been partially exempt from rot. The vintage of 1880, I think, in this county will be very fine. Wine of a superior quality and flavor.

"JACK" HARDIN, Owensboro', Daviess County:

I don't suppose there is over 100 acres in grapes in this county, all told. I have 1,000 vines on about two acres. Of eight varieties, but three do well; namely, the Concord, Iona, and Ives. I make from 100 to 200 gallons of wine yearly, and have been offered \$1 per gallon for it.

JOS. I. YOUNGLOVE, Bowling Green, Warren County:

Our soil is generally a tenacious red clay, which is not the best soil for grapes, as it is very susceptible to droughts. This soil is generally underlaid with limestone. My above estimate is number of acres in vineyards, not taking into count the garden grapes of 5, 10, or 20 vines in a place. Were the latter calculated the number of acres would be doubled. Our wines are made principally from Concord, Ives, Perkins, Norton's Virginia, and Herbemont. Of fifty kinds that I have tried these are the only ones desirable for wine. I have not tried the newer kinds of the past five years' introduction.

W. W. CULBERTSON, Ashland, Boyd County:

There are no vineyards in this county. Some of the citizens have a dozen vines or so in their gardens. About ten years since quite a move was made in the way of vineyards. But the crop was so uncertain the cultivation was given up. I feel sure this failure was on account of the accidental location near foggy streams of water, and the prevalent notion that land too poor for anything else was good for grapes. I have about 25 vines which I manure with lime and cut close down, and they bear finely every year; but they are in dry, sandy soil high from the water.

J. M. BENT, Mount Sterling, Montgomery County:

Nothing was grown here but the Catawba and Concord till within the last five years. I have introduced some fifty other of the best varieties, and have grown them successfully; among them Delaware, Goethe, Cottage, Croton, Maxatawny, and most of Rogers' hybrids. The Delaware and Iona ripens July 20, the Catawba, Goethe, Norton's Virginia, and Cynthiana ripen with me by the 1st September. I am now testing Black Hamburg and other foreign grapes on high mountain slopes, where, I think, they will mature in the open air. I have no doubt this locality is adapted to the cultivation of the grape in a high degree, and hope to demonstrate it in a few years.

J. BOURLAND, Madisonville, Hopkins County:

No grapes raised in this county; only a few hills for family use. Soil not suitable, being a tenacious clay subsoil, causing the grapes to rot so much that it will not pay.

STEPHEN MENARD, Paducah, McCracken County:

I am the only one who is beginning to cultivate grapes for wine-making. I have met with great success with the quality of the wine, but have only been able to make good wine from the Catawba grape, and it varies here very much.

J. W. WILLIAMS, Greensburgh, Green County:

The Concord, Hartford, Ives, and Delaware, regarded most desirable of the older varieties, are quite hardy and succeed well upon all our lands, except such as are water-soaked or that underlaid with hard-pan, or cold, wet, clay subsoil. The grape industry is yet in its infancy in Green County, Gen. E. H. Hobson and J. W. Williams, near this place, being the only persons as yet who have paid any attention to the vine in this county, other than perhaps a vine or two in the gardens. Each of the above named gentlemen have produced some splendid grapes of the varieties named above, and have succeeded in making quite a palatable article of wine. There is but little doubt but that with proper culture, &c., the vine could be successfully grown in the greater portion of this county, and its product more renumeration than our staple (tobacco).

D. J. WILLIAMS, Versailles, Woodford County:

The rot frequently destroys two-thirds of the crop. We find the grape succeeds best when allowed to run on trees and not subjected to such close trimming as when grown on wire trellis.

CHARLES P. HALE, Calhoun, McLean County:

The principal grape grown here now is the Concord. When the vines are four to eight years old, they sometimes yield enormous crops. From my experience I will say from five to eight thousand pounds per acre, but for some years past once in two years the best buds on the bearing vines have been destroyed by the severe cold of the winters, reducing the average nearly one-half. I have several hundred Concord vines trained on stakes. They are about twenty years old. They have become very stiff and rugged, and have been failing to yield good crops for four or five years. I

have commenced digging out the old vines, and planting young ones in their stead, a few hundred at each planting, and expect to continue to dig out every year or two until I get the whole replaced by young vines. My experience is that every twelve or fifteen years vines of that age should be replaced by young vines. A great many acres of good grape land in this county, but nobody to invest in it to any great extent.

CLEMENT R. EDWARDS, Bowling Green, Warren County:

We have at our vineyard 17 acres bearing vines. The yield is much less than the average given; one of my neighbors reports fifteen barrels of wine on less than an acre of land, and the crop lessened by rot badly. My own must from Concord very rich in sugar; must measured by scale, 82°; the richest ever made in this section. From 60° to 74° has usually been the average. Portions of my vineyard (several acres) yield fully five tons of grapes, while the average in the 17 acres was not over 1,500 pounds. My partners, Dr. Jos. A. Briggs, and myself have in all 21 acres in grapes, on a sand ridge, the same reported to your department last year, under the firm of Briggs & Edwards. We injured our crop in 1880 by plowing too late. I find that after the shoots get well started in the spring, it is better to let weeds grow than work with a plow on our light sandy soil. My neighbors report a different experience, with a different soil, viz, on limestone soil, with red clay subsoil; my subsoil is fine clay, just below the western Kentucky coal measures.

#### LOUISIANA.

JOHN T. MUNSCH, Covington, Saint Tammany County:

Grape culture is only in its infancy in this locality; several vineyards have been started. Ives, Concord, Norton's Virginia, and Herbemont are the leading sorts.

J. M. JENNINGS, Winnfield, Winn County:

Our climate, and the soil generally of this parish, I think, will be favorable to the cultivation of many varieties of wine-producing grapes, particularly the Scuppernong and Concord. In the northwestern part of this parish there is an indigenous grape, growing wild, which is of large size and excellent quality; and no doubt, by cultivation, could be made a valuable addition to the products of this section.

#### MARYLAND.

L. GIDDINGS, Annapolis, Anne Arundel County:

Of late years there has not been a sufficient demand for native wines to induce our grape-growers to press the products of their vineyards. They prefer to sell the fruit at prices which, for the last two seasons, have ranged from 2 to 4 cents per pound. But few of our land owners have the capital to provide suitable cellars, casks, &c., for the business; nor are they willing to wait until a vintage matures for the profit of their labors. The light, warm, and naturally well-drained soils of this county are admirably suited for the vine, and our climate is favorable for the full development of the fruit. It needs but the establishment of a thoroughly equipped and skillfully managed wine company to make grape-growing one of the most extensive industries of this section.

CHARLES STEVENS, Denton, Caroline County:

From the present prospect, the wine made in this county will be equal to any in the country. There has been some fine wine produced. The wine made last fall promises to be better than any made heretofore. The Concord grape is held as the most profitable.

Col. JAMES WALLACE, Cambridge, Dorchester County:

The writer of this article has grown for a few years, very successfully, Catawba, Delaware, Clinton, and Concord. Made wine from Catawba and Delaware like unto and equal to pale sherry. Few, if any, connoisseurs could distinguish the difference. The wine was vastly superior to that produced in Western New York and on Lake Erie—being much richer in sugar, flavor, and coloring matter. The wine was made by the French and German methods, as described in the Report of Commissioner of Agriculture for the year 18—. The Catawba or light wine was readily sold for \$3 per gallon. The red wine made from the Concord and Clinton grapes was sold for \$1.25 to \$1.50. The enterprise was profitable for a few years, but a series of damp, funky, hot summers, such as mildewed the wheat, gave the Catawba vine the leaf blight, destroyed the canes. The vineyard was abandoned. Still find the Concord profitable, but the fruit mostly sold for table use.

The soil and climate are well adapted to the growth of the hardier varieties, such as the Concord, Clinton, Herbemont, Madeira, &c. We are succeeding well thus far with the Salem and some other of Rodgers' hybrids. The same varieties of grapes here

are superior in flavor and richness to those of the same varieties grown to the north of us and in the mountains. But the great drawback to the vine culture is that the more valuable and tender varieties cannot stand up under our hot, damp summers. We can get occasional crops from them by fertilization or changing the vineyards. The crop is almost entirely shipped to New York, Philadelphia, and Baltimore, and sold for table use. The acreage has not increased in the last five years, owing to the small returns.

L. L. WATERS, Princess Anne, Somerset County:

Very few persons have experimented in grape culture in Somerset County, and most of those who have done so have failed from a want of a proper knowledge of the varieties adapted to our climate and soil. Most of those who have experimented at all purchased the fancy varieties, which are more extensively advertised by nurserymen, and have found them valueless on account of mildew, to which they are generally liable in this climate. The Concord, Clinton, Ives seedling, and Norton's Virginia, in the order named, seem best adapted to our climate, and are the only varieties so far experimented with which promise any measure of success.

IRVING SPENCE, Snow Hill, Worcester County:

This is a section of country very favorable to vine culture, and yet comparatively little attention is given it. Almost every variety succeeds, and some which at the North are invariably grown under glass do well here with open-air culture. Some fine wine is made in the county, and sold at about \$1.50 per gallon. The yield of grapes and wine is remunerative to the careful cultivator.

JOHN J. MAXWELL, East New Market, Dorchester County:

Grapes do not prove very remunerative some years. The Concord is the main variety planted and rots very badly after the third year of bearing, and some do not consider it a very good wine grape. Very little wine is made in this county except for domestic purposes. Early varieties always pay best.

#### MASSACHUSETTS.

JNO. O'BRIEN, Bradford, Essex County:

The culture of the grape in Essex County is generally confined to garden lots and small inclosures, and, with but few exceptions, it does not extend above this. However, as the county is thickly settled with prosperous towns and cities, that wealth can afford, the grape stands high on the list of the products of the soil. Every well-to-do and prudent man cultivates a few of our hardy native varieties, always giving them the choicest and most favorable spot in the garden. Some grow 5 vines, some 10, 20, 30, 40, 50, and up to 200 or 300. No one person has a full acre under the vine, though it could be so with profit. I have raised myself this season from 25 Concord vines, eight years old, 560 pounds of fine ripe fruit. This is at the rate of 8 tons to the acre. I train on a wire trellis 4 feet high, and allow each vine but 6 feet to rest its arms on. I apply liquid manure several times during active growth, and keep every shoot pinched back from the 10th of July out. I ask permission here to state that I took five first premiums on grapes at this season's annual fair of our Bradford Farmers' Club, and have for every year since the club was organized. I have made good fair wine from the Concord, Clinton, Delaware, and Diana. In making, I use a small hand press that holds about a bushel; I grind them first and leave them in that condition twenty-four hours, then I put them in the press and get all the juice out, which I strain into a clean barrel, immediately adding two pounds of sugar to the gallon. I got six and one-fourth gallons of clear juice out of a bushel of ripe grapes. A bushel of grapes will weigh 40 pounds, and the average yield of wine per acre throughout the county, from a fair estimate, is 325 gallons.

E. S. ROGERS, Salem, Essex County:

The varieties which ripen pretty well here, as well as other standard sorts, like Catawba, that rarely mature in this county, are grown to so much greater perfection and of such superior quality on the lake shores of Western New York and Ohio, that grape culture or wine making would not be considered a profitable investment in this region.

D. E. HOXIE, Northampton, Hampshire County:

Comparatively little acreage in this county devoted to grapes, but there is more interest than formerly, and more than ever before are being set. The early hardy varieties only are profitable here, such as Concord, Hartford, Agawam, Delaware. Some of the newer ones, viz, Lady Moore's, Ely, and Brighton, are growing in favor. The market for table grapes being good, there is little left for wine-making.



F. J. KINNEY, Worcester, Worcester County:

The grapes grown in this county are mostly the Concord and its seedlings, and other early native varieties, none of which are desirable wine grapes. The net price (wholesale) this year has been about 9 cents a pound—sold for a table grape.

ALFRED CROCKER, Barnstable, Barnstable County:

I cannot learn of any vines being cultivated to any extent in this county, not enough being raised for eating. Very little wine is made, and that only for home consumption. A few gentlemen have glass-houses, and raise a few pounds of very choice ones. Grapes do very well here out of doors, the birds doing as much damage to them as anything I know of. The Concord and Rogers are the best suited to this locality.

ASA CLEMENT, Lowell, Middlesex County:

Grapes are conveyed fresh to market, and sold by the pound or by the box, for the table or counter, at the shops. Grapes grown here will not make wine without the addition of sugar, say from two to four pounds to the gallon, then it does not seem to be wine proper, and not altogether an unmixed good.

FREDK. G. PRATT, Concord, Middlesex County:

The variety grown here is almost exclusively the Concord. We are in the vicinity of large cities, and there is a demand for the fruit as fruit, and there is no wine made to any amount. The Hon. E. W. Bull, the originator of the Concord, tells me that he thinks there may be 1,000 gallons of wine made yearly in the county, mostly from the refuse of the pickings. There is but one vineyard in the county (in Chemsford) that makes all the crop into wine, which is sold in Lowell at \$2 a gallon. Beyond that there is nothing to establish a price for wine, as what little is made is for home consumption. As near as I can estimate, there are 150 acres in vineyard in Middlesex County.

RICHARD L. PEASE, Edgartown, Dukes County:

From the name, Martha's Vineyard, given to the principal island of Dukes County, and the largest island belonging to New England, it might naturally be thought that grapes were largely cultivated. When first discovered, there were many grapes growing wild. That is still the case; but while very many residents have vines which bear choice fruit, there is no special attention paid to the cultivation of the grape. No single acre of vines has been planted by any one man, and no wine is made, except in rare instances, a gallon or two for domestic use.

WILLIAM C. STRONG, Newton Centre, Middlesex County:

Grapes are not raised for wine in this county, and there are not more than 10 acres of vines in the county. One man buys all the poor unsaleable grapes he can find and makes what he calls "native wine" for communion purposes, possibly 3,000 gallons, poor stuff. This is all I know of, except as made on a small scale for family use. But there are thousands of householders who have from one to ten vines for home table use. Delaware is best, and when old and well fed does pretty well. Worden is early and popular. Brighton is doing pretty well; but the Jefferson is most promising as a new grape. In quality it is unsurpassed, and it seems to be iron-clad. We have high expectations from it.

J. W. TALBOT, Norwood, Norfolk County:

There are no large vineyards in this county. The small ones raise grapes for home consumption and table grapes for Boston market. The grape here is uncertain, from frost and mildew, and is not remunerative. We cannot compete with New York and the West. The amount in this county is fast diminishing, except for family use.

Dr. J. R. NICHOLS, Haverhill, Essex County:

Our kinds are largely the Concords and the Delawares, and, to some extent, the Hartford Prolific. We are too far north to produce the finer varieties for table use.

JOHN S. KEYES, Concord, Middlesex County:

Only a very small percentage of the grapes, which are almost universally Concords, is used for wine-making. They were sold for table use in the Boston market at from 3 to 8 cents per pound at wholesale, and from 5 to 10 at retail, the past season. Wine is made from them only in small quantities for domestic use, except in cases of a glut in the market, owing to early frosts, &c., when the surplus is bought by wine-makers. The above estimate is accurate only for Concord, where the grape originated, and includes all vineyards of half an acre or more; but there are many hundreds of vines in small patches and borders of gardens from which the fruit is sold that are not included in the estimate.

BENJAMIN F. GIBBS, East Wareham, Plymouth County :

We are too far north for successful grape-growing without close trimming and thinning of the fruit to give length to the season. I raise for table use; extreme weight to the bunch,  $1\frac{1}{2}$  pounds; minimum weight,  $\frac{1}{4}$  pound. My fruit sells at wholesale in Boston market (1880) at 12 cents per pound; 1879, at 15 cents per pound, against New York and New Jersey grapes at 4 to 5 cents. I trim upon the renewal system. Each vine is only allowed to carry 12 bunches of fruit; the vines trained to wires; vines set 6 feet apart in rows, and rows 8 feet apart; fertilizer, wood ashes and disolved bonedust or ground bone.

EPH. W. BULL, Concord, Middlesex County :

The proportion of grapes used in wine-making cannot be easily ascertained, as only the unmarketable bunches as a rule go to the wine-press. I have made on one occasion 600 gallons from one acre, pure juice; that is to say, without addition of water, but using the whole crop. Within my knowledge one grape-grower makes 700 gallons, another 210 gallons, another 120 gallons, another 86 gallons—this within an area of ten miles square.

PETER PINEO, Hyannis, Barnstable County :

Almost every householder has one or more grape-vines. I know of but few cases where more than a fraction of an acre is set to vines, and but one case in which wine-making is attempted for more than domestic use. In this case perhaps 50 gallons have been made per year for several years. It is not a perfect wine, and not valuable.

JOSEPH W. PAIGE, Medfield, Norfolk County :

My cultivation of grapes is in a small way. My vines cover less than one-half of an acre, mostly Concord, which I find to be the best variety for general cultivation in this latitude. Have tried many other kinds, including Hartford Prolific, Adirondack, some of Rogers's hybrids, but find some imperfections in them all. I train my Concord on shed-like trellises (made of galvanized wire) over walks and drives, and I think I get far more grapes from them and much better than I get in any other way.

JOHN B. MOORE, Concord, Middlesex County :

Grapes are grown here for market purposes principally, and there is a disposition to increase the number of acres and to plant earlier varieties than the Concord. The price which good grapes command in Boston markets is too high for the making into wine. We are not troubled by insects to any great extent, except by the rose bug, which were very numerous the last season and required constant picking by hand.

#### NEW MEXICO.

B. ROSENFIELD, Hot Springs, Grant County :

Grape culture in this county is only now beginning to attract attention. There are at present not over 5,000 vines in the county, and only one party made a trial last season and succeeded in producing a quality of wine good beyond all expectations. This spring about 5,000 more vines will be set out on this river alone. It took 12 pounds of grapes to produce 1 gallon of wine. The variety grown here is the El Paso grape.

T. CASAD, Mesilla, Doña Ana County :

The average number of vines per acre is about a thousand at about the age of ten years; the average yield is 10 pounds to the vine. The Mission grape of California, identical with the El Paso grape of New Mexico, is the grape used.

JNO. H. THOMSON, Santa Fé County :

Grape-growing in New Mexico is at present confined to the counties bordering on the rivers Rio Grande and Pecos :

#### MICHIGAN.

S. E. WOODWORTH, Battle Creek, Calhoun County :

There are about 20 acres of grapes in this county, all sold for table use. As far as I can learn, of all varieties the Concord does the best in this locality.

R. Z. ROBERTS, Harrisville, Alcona County :

Until very recently, it has not been thought that grapes could be grown here at all. Within the past four years some farmers have set from one to a half-dozen vines each, perhaps, but there has been no systematic effort at proper cultivation of these few, even. Last year I ripened grapes from a half-dozen each of Concord and Champion. But the result was not wholly satisfactory. Shall set a few each of several of the varieties reputed most hardy the coming season, but have very much doubt about even



being able to get anything which will stand our climate so as to warrant the planting of grapes for any other purpose than as an adjunct to the garden for home use.

J. D. BALDWIN, Ann Arbor, Washtenaw County :

Nearly all the grapes grown in this county are raised for home consumption. The Concord is the chief grape grown, but some of nearly all the best varieties are cultivated. On elevated locations nearly all the hardy varieties endure the rigors of our severe winters without protection, remaining through the year on the stake or trellis.

W. W. WEATHERBY, Grand Rapids, Kent County :

I have found by experience that salt is a most excellent fertilizer for the grape. No vineyardist can afford to do without it; 1,000 to 1,500 pounds to the acre is none too much. It makes the vines healthy and vigorous, and the grapes ripen a few days earlier.

J. G. RAMSDELL, Traverse City, Grand Traverse County :

The grape thrip has made great ravages the past year, defoliating a large percentage of the vines as early as July and August, thus spoiling the crop for this year. Delaware, Rogers hybrid, Adirondack, and Iona suffered worse than Concord and Hartford in same vineyards. No practical remedy discovered, although plenty of infallible nostrums are recommended.

S. P. JAQUETH, Benzonia, Benzie County :

No vineyards have as yet been started. Our county is still new—mostly covered with timber. Some pine, but our best land abounds in hard wood, sugar-maple being more abundant than any other kind. Our country is rolling—might be called hilly. Soil sandy, abounding in lime and potash; hence, good for corn or wheat. We are on the eastern shore of Lake Michigan, about 44° 40' north latitude. Our prevailing winds are southwest, so the cold winds must sweep over from one to two hundred miles of the warm water of the lake before reaching us, hence our mild climate. Grapes are a very successful and bountiful crop wherever tested, but as yet have only been grown to supply our home demand. That vineyards can be made a success here there can be no doubt.

MICHAEL SHOEMAKER, Jackson, Jackson County :

There are a great many grapes raised in gardens, for the table, and occasionally small quantities of wine are made for home use. All grapes more hardy than the Catawba succeed well here. I have thirteen varieties on my grounds, and have never failed to have a fair crop. In exceptionally long warm seasons the Catawba gets fully ripe.

W. T. WITHEY, Benton Harbor, Berrien County :

The grape crop was rather light for 1880 in our section, on account of the rose-bug. When the grape blossoms, and just as they are going out of blossom, the air seems filled with rose-bugs, who alight and eat all, and sometimes only a few berries out of a bunch, which makes imperfect bunches. Whatever damage they do is done in a few days. There are very few grapes made into wine in my section, and that mostly for private use. But people are talking of going into wine-making, as the prices for grapes have ruled low of late years.

JOHN HIGBEE, Ionia, Ionia County :

Concord is the grape for this county; other varieties are subject to mildew, and, without protection, the winters kill. The market-price averages about forty dollars per ton.

C. E. RUST, Ionia, Ionia County :

There is no one growing grapes in this county for wine exclusively. The Concord is grown the most extensively of any variety, and in fact is the only variety that we have tried so far, that is considered perfectly reliable in this county, and is grown more for fruit than wine. There is but very little wine made here, unless the market becomes overstocked with grapes or from some cause the grapes become unfit for anything but wine, which is the case sometimes when we have early frosts or hailstorms, which this country is subject to.

EDWARD BRADFIELD, Ada, Kent County :

There are no large vineyards in this county. Very little wine is made, and that mostly for domestic use; ten barrels would probably cover the annual product sold. I know of no commercial wine establishment west of Detroit, in this State, and none east except Monroe. In consequence of a rainy season and sudden atmospheric changes, all varieties of grapes failed to ripen more than half the crop last season. The foliage dropped from mildew, and the green grapes dried on the vines.

JOSEPH SEDLACZEK, Monroe, Monroe County:

The variety principally planted here is Concord; very small proportion Delaware, and some of the new sorts on trial. There are two other parties besides myself in this place who are making from 5,000 to 20,000 gallons of wine every season, buying grapes from others, besides many who make several barrels. The price paid last fall (1880) was, on an average, 2 cents per pound. The most of the crop is marketed in Chicago. July 18, 1880, a very severe hailstorm destroyed the best and largest vineyards near this city, so as to make the next crop very questionable.

MINNESOTA.

L. R. DAVIS, Lac-qui-parle, Lac-qui-parle County:

Although I am well acquainted throughout the county, I have no knowledge of any grapevines being planted here, at least until last fall, and then very meagerly; and, from my own experience and observation, I judge that not one of them will survive the present severe winter. I have some dozen vines that have been out two seasons, but from their present appearance I have but little confidence in their success here, although I am free to admit I never saw vines do better than mine did the first season.

ALFRED C. LATHROP, Glenwood, Pope County:

This cold, prairie region on the watershed of the Mississippi and Red River of the North is not adapted to grape culture, nor for the manufacture of wines of any sort.

HERMAN DIETERLE, Wabasha, Wabasha County:

The best varieties grown here are the Concord and Delaware; the Rogers No. 15 is also grown, but suffers from the frost in the fall; the Clinton and Salem are also grown here with success.

TRUMAN M. SMITH, St. Paul, Ramsey County:

Grapes raised here have to all have winter protection; that is, pruned in the fall, laid down, and covered with earth. The expense is so much and labor so great that no one will undertake to grow grapes in this northern latitude for wine-making in competition with more favored climes; but grapes are raised and sold for table use and preserving, and before railroads came here paid very well; but now transportation is so cheap, they come so quickly, and in pretty good shape, that grape-growing here will not pay any profit. I have grown grapes for twenty-one years, and have had but two entire failures. I have raised as high as 4 tons per acre, but here not over 2 tons per acre should be left on the vines. The vines should be planted 8 to 10 feet apart each way, to let in sun and air, and give the fruit a chance to ripen before early frosts in fall; and hence the plan not to let the vines overbear pays in earlier ripening, and better and larger bunches of fruit, which is very desirable for table grapes.

C. H. PETTIT, Minneapolis, Hennepin County:

I consider the Delaware and Concord the most reliable in this climate.

CHARLES H. CLARKE, Minneapolis, Hennepin County:

Grape-growing is not carried on to any great extent in this county. In the vicinity of Excelsior, on Lake Minnetonka, on several small vineyards, and in other localities contiguous to the city of Minneapolis are small vineyards, mostly young with a small per cent. of bearing vines; the product is all sold or consumed here at home, generally for table use, the Delaware and Concord varieties predominating; no wine to speak of is made from them.

L. M. FORD, Saint Paul, Ramsey County:

One important feature of grape culture here is the fact that our climate appears to suit the Delaware remarkably well, while in many localities farther south they succeed, but very poorly. Of course vines are covered here in the autumn, which adds to the expense of the crop. Our climate in many respects is very good for grapes, as we have very little mildew or other diseases peculiar to southern localities.

T. G. CARTER, Saint Peter, Nicollet, County:

There are but few vines in this county. One fourth of an acre is probably the largest vineyard. The seasons are not long enough usually to ripen the crop, except the Janesville, which always ripens. Concord and Delaware are the kinds usually cultivated. Some Clinton which always ripens, but is a poor grape. When we can find an early grape of good quality, which is sufficiently hardy for this climate, we can go into the grape business, but now it does not pay. No wine is manufactured unless it is a small quantity occasionally for family use.

O. M. LORD, Minnesota City, Winona County :

Mr. William Knopp, of Winona, has seven acres planted in vines mostly of Concord and Delaware, but has several other varieties; he has been quite successful. Grapes are mostly sold here for table use by the pound. Among the varieties that have been grown successfully are the two named above and Rogers No. 4 and 30, the Lindley, Hartford, Prolific, &c.

ARKERMANN BROS., Young America, Carver County :

Grape-growing just commenced in this county and only few farmers have planted to any extent; most of them have only a few vines growing in their gardens, as all vines have to be covered during winter. Grape-growing cannot be made profitable in this county. We have about 250 plants growing, and have to our knowledge the largest number of grapevines growing in the county. Only one farmer in ten has one or two vines growing, and not one in a hundred more than ten vines.

DAVID A. ADAMS, Hutchinson, McLeod County :

I would say that there are no grapes raised in this county for the purpose of wine-making; what are raised, are raised for the table—family use. I know of no one in the county that has more than 100 vines; do not think there are two persons in the county that have that number. In my travels about the county, I find that farmers and others have from 6 to 20 vines—those that have any. There appears to be a general desire among the people to raise more grapes, now that they are certain that a few kinds can be raised here. The Concord, Hartford Prolific, and Clinton winter well here, and the Delaware does well, with extra care in winter. The Concord is the hardiest grape here, and yields the best, too.

#### MISSISSIPPI.

A. Q. WITHERS, Holly Springs, Marshall County :

Grapes of many sorts do well here; the Concord, Ives, Iona, Clinton, Tuloka, Delaware, Martha, and Scuppernong succeed best, being exempt from blight or rot and is a certain crop. About our little city all have them in gardens, from 10 to 100 vines. Near by are several small vineyards varying from one to five acres, and all succeed well, bearing bountiful crops, especially when attended to. Dr. F. B. Shuford raised last year many bunches of the Concord, Ives, and Hartford Prolific that weighed each two pounds, and to him is due an accidental discovery. Birds are great pests here to grapes. He, to protect them, bought 1,000 paper bags and placed the bunches, when beginning to ripen, in these bags to protect them. It so happened that 12 or 15 bunches on his vines escaped notice until the frost killed the foliage. The grapes in these bags were found to be delicious—far better than at their ripening—the juice being thicker and sweeter. The Ives was the best improved as its astringent quality was all gone. As regards grape culture but few pay necessary attention and few sell them or make but a limited amount of wine. This country is truly inviting for vineyards and wine-making, as lands are cheap and they are sure crops.

G. W. HOLDEN, Enterprise, Clarke County :

The only grape that succeeds here is the Scuppernong, and only a limited amount of this grape planted. As the Scuppernong grows older it increases rapidly in bearing fruit.

J. M. D. MILLER, Iuka, Tishomingo County :

Vines would do well generally—the soil is porous—a few have tried, but have no home market—not profitable without more money capital. The Scuppernong is the most profitable. There is one vine about twenty years old that produces annually 50 gallons. It is three miles south of Iuka. The Hartford Prolific being early is used for table grapes. The Catawba is the next most profitable. The Clinton is a hardy wine grape but not fit for table use. There are other good varieties. If Italians or Germans would locate in this vicinity they could buy lands at \$1 per acre that would yield handsomely in grapes and small fruits generally. The location is unsurpassed for health.

T. B. GRAHAM, Forest, Scott County :

Grape culture is in its infancy in this section. The culture is almost entirely garden, only for family use. The Scuppernong varieties are in favor, requiring no experience in pruning, and of excellent flavor. The whole country abounds in wild grapes, that make an excellent red wine.

J. J. SHANOM, Meridian, Lauderdale County :

Several attempts to make wine have been made in this county. About twenty years ago two or three vineyards of the Catawba existed in the county, and for a time they did well, and the wine was bottled and sold for a good price. These vineyards

failed from the grapes rotting and were abandoned. What wine is made here now is chiefly from the Scuppernong. I have a half acre in Concord and made wine from it two years that was a fair article, but not equal to the Scuppernong wine. It is difficult to estimate the acreage of grapes. There are perhaps 150 persons in the county that have grape-vines, but most of them only a few vines. I have over an acre, and the largest I know is four to five acres. The Concord, Ives, and Scuppernong have done better than any with me.

Dr. J. R. S. PITTS, Waynesborough, Wayne County :

Grapes are grown only to a very limited extent in this county ; but few persons pay any attention whatever to the culture of vines ; those who have planted vines have in every instance been well compensated for their trouble. The soil and climate are peculiarly adapted to this branch of agricultural pursuits, and it would afford me great pleasure to see this branch of industry extensively developed in this portion of country.

H. H. HOWARD, Carthage, Leake County :

Growing grapes is not an industry of this part of Mississippi. There are, however, many citizens who grow a few vines for grapes for the table use, to be consumed when and as they ripen. Amongst the most common met with are the Concord, Scuppernong, and various others. All varieties seem to be thrifty and healthy, and very productive when properly cultivated and cared for. The woods are full of the various wild grapes, and the swamps full of the Muscadine.

T. H. SKIPWITH, Oxford, La Fayette County :

About twenty-five years since, some persons here, thinking this would be a good grape country, introduced quite a large number of Catawba and Isabella grape-vines. They prospered at first, and on the third year bore full crops. After the third year they rotted, so that they were worthless, and the vines were destroyed or abandoned. In 1871 I introduced a few Concord and Ives Seedlings, but could not persuade any one to put out cuttings, as the entire failure of the Catawba and Isabella had convinced them that this was not a grape country. As my Concord bore heavily the fourth and fifth years many set out cuttings, and now they are to be found in many gardens, and two small vineyards have been started. In one of them a little wine was made last year, and more will be made the coming summer. The Herbemont and Delaware are also succeeding very well ; other varieties are being tested. The department sent me three last fall, which I hope may be adapted to our climate. I had a fine 4-year old Goethe vine, but it rotted so badly that I destroyed it. I think our rolling light-clay lands will prove favorable for grape culture. The Scuppernong is as hardy and succeeds as well as the common wild grape.

R. BOLTON, Pontotoc, Pontotoc County :

Grapes are not cultivated in this county for market or for wine, but many families have a few vines, mostly Scuppernong, for their own use. There is a belt of land running north and south through this county of about ten miles wide and fifty long, dividing the Mississippi and Tombigbee waters, that appears well adapted to the cultivation of the grape. The soil is, say, one to four inches sand and vegetable matter on top, then 25 feet of red loam, good for wheat or making brick ; below this, about 30 feet of loose sand, lying upon hard rock composed of oyster shells. Where the loam and loose sand meet is the habitat of the wild summer and frost grapes, which were formerly so abundant as to give names to the ridge ; Ponketokala (hanging grapes) being the Chickasaw name of this town. In the sand are many small scales of mica.

From an experiment made in my family twenty years ago, I think the summer grape (of the size of a pea) could be cultivated, and would make a wine equal in flavor and other qualities to a superior claret. Some families make wine every year from the wild grape and the Muscadine, which grows abundantly. Vines of many sorts from nurseries are cultivated and do well, though some are subject to the rot. Some vineyards were commenced before the civil war, but, with many orchards, have gone to ruin. The ridge above mentioned is well adapted to fruit—peaches, pears, quinces, and berries, mostly.

#### MISSOURI.

JOS. L. MCALEER, Saint Joseph, Buchanan County :

Nine-tenths of the vines in this county are Concord. Many of the small growers make wine only for their own use. Concord wine varies in price from 25 to 75 cents. Catawba, Elvira, and Virginia Seedling wine sell at from \$1.00 to \$1.25 per gallon.

C. CONRAD, Carthage, Jasper County :

Grape culture is not carried on to any extent for wine-making purposes. Yet grapes do well in this climate ; and for domestic purposes there is an abundant supply generally at low figures.

JNO. T. JACKSON, Chillicothe, Livingston County :

Grapes do very well, and are seldom injured by dews and rains. The average value per pound is 3 cents. It was difficult last autumn to procure even that low price.

W. W. DAILY, Beaver, Douglas County :

The grape is grown here only in gardens, where the vines grow luxuriantly and bear well every year. The Concord is the variety planted. Wild grapes grow abundantly ; and some German families that have recently moved here consider it a good locality for vineyards, as the county lies on the south side of Ozark Mountain.

SAMA RISLEY, West Plains, Howell County :

We are at too great a distance from railroad to make wine-growing profitable. Those who have experimented with vines say, however, that this county cannot be excelled in the West for quantity and quality of fruit and freedom from disease. As soon as this country is provided with an outlet, large areas will be planted in vines that are now considered waste lands.

JNO. W. MANSFIELD, Astoria, Wright County :

This is the best State in the Union for grape-growing and wine-making. The grape grows large and fine and yields well, and makes fine wine.

HEINRICH DRIESEL, German, Wright County :

The country on which the above grapes were grown lies between three streams, the Beaver, Robeaudaux, and Gasconade. The land is high and well timbered and watered, and is well adapted to grape-growing ; situations can be chosen which are suited to the tenderest varieties. We have grown grapes for the past eight years and have had no failure yet. The season is of sufficient length to ripen any grape grown in the United States, since the latest varieties will ripen on an average four weeks before any frost, and are seldom injured by late frost in spring on the high tableland. The soil is generally limestone. Land can be bought in this section for the government price of \$1.25 per acre, fully one-fourth being still open for settlement. The wine produced here is of great body and very fine flavor. Fruits of all kinds will grow to perfection.

THOS. W. GAUNT, Marysville, Nodaway County :

I send you as close an estimate of the acreage of vineyards and the products of the same as I can procure in Nodaway County. The size of the vineyards are from one to five acres in extent, planted with the Concord mostly. This hardy, robust grower is perfectly at home on our high, dry, rolling prairies, and makes a very excellent wine, worth from \$1 to \$1.25 per gallon ; the bunches sell at from 3 to 5 cents per pound, retail, for table use. Some of the vineyards are not in full bearing, yet there is quite a growing interest in wine-making in our county. I have near one acre of Concords in full bearing, and gathered for the year 1879 over two tons of grapes, and had enough left to make ten and a half barrels of wine, but this was the result of allowing an itinerating professional to trim my vines, who knew nothing about dressing a vineyard, he having left too much fruit-bearing wood on the vines ; and for this act of folly, the same vines for last year, 1880, only produced grapes enough for seven barrels of wine. The Agawam, Goethe, Elvira, Brighton, Martha, and vines of this class do well here and ripen their fruit perfectly and do not drop prematurely. We have a fine grape soil.

RAPHAEL BUSH, Bushberg, Jefferson County :

Not having any statistics, the above is merely a guess ; besides the variety the season must be taken into consideration when estimating the yield and value ; such varieties as the Norton's and Cynthiana yield less and are valued at higher price, making heavy red wines ; the same as to Elvira and Noah as white wines. The latter two varieties yield in fair seasons from 12 to 20 pounds to a vine, and all of these kinds are *phylloxera* proof, besides many more too numerous to be mentioned.

JAMES MUIR, Booneville, Cooper County :

We have not made over one-third of a crop for the last five years. The Concord in good locations, well cared for, in a good season will produce 1,100 gallons per acre. The Virginia Seedling yields about half as much but it is less subject to rot. It takes about 12 pounds of Concord and 14 pounds of Virginia Seedling to make one gallon of wine.

Q. MCK. WILSON, Moberly, Randolph County :

I have endeavored to obtain information touching the matter of grape culture and wine-making in this county, and find my efforts fruitless. Having addressed cards to persons supposed to be acquainted with the business personally or otherwise, I have in no instance received information of value, except in one case by a personal appli-



cation, after failing by correspondence. The inference is, that but few grapes are grown in our county, only for home or family use, and very little converted into wine. I know of two vineyards that have fallen into decay from neglect, incidental to want of success, the crop so often failing by the rot, and the low price received for those marketed—2 to 3 cents per pound. My statistics are quite meager, which may be attributed to the lack of interest felt by the few who cultivate the grape for market.

Grape culture for market or as a source of revenue is not increasing in this county. True, the last ten years has added greatly to its cultivation on almost every homestead for home use, and the writer believes that its culture was introduced in a good portion of the country, as above stated, by his planting a small vineyard twelve years ago.

Subsoiling, close winter pruning, constant attention to and judicious summer pruning, with crushed or burnt bone and wood ashes as fertilizers, and good tillage, will, in his opinion, produce 20,000 pounds Concord grapes to the acre, 6 by 8 feet apart for vines (907 to the acre). This is a good country for grapes, and, indeed, all the fruits of the temperate zone.

ISIDOR BUSH, Bushberg, Jefferson County:

The above are mere estimates, especially with regard to the number of acres planted in vines. I consulted others engaged in grape culture in this county, but they, as well as myself, could merely *guess*. The only way to obtain information which would be more reliable, and not mere guesswork, would be to make it the duty of the county assessors and their deputies to ask each proprietor how many acres he has in cultivation and the results of his previous crops, and to report under penalty if he fails to do so. The year 1880 was one of the most favorable for grapes, both as to quality and quantity. There was almost no rot except on the hybrids and some of the *Labrusca* varieties, and no mildew. *Elvira* yielded a very large crop, averaging over 10 pounds to the vine, and producing a pleasant light white wine.

ABRAM FULKERSON, Tusculumbia, Miller County:

Grape culture in this county is not carried on by any one extensively; there are many small patches, and the above estimates are made up from information collected from different neighborhoods and those most extensively engaged in the business.

Miller County is well adapted to the culture of grapes and all kinds of fruit.

ANTON SCHROCK, Marble Hill, Bollinger County:

Bollinger County has a considerable area which seems well adapted to grapes that are excellent for table use and the production of wine. Those now engaged in grape culture in this vicinity are only amateurs, and cultivate by small patches of one-half acre to three acres, apart from their regular business of farming. Some sell their grapes in our towns or send them to Saint Louis. I make wine in a small way because it has dull sale here. We need immigration of Germans from the wine provinces who perfectly understand grape culture and the manufacture of wine. The Ives and Hartford do well, but the Norton's Virginia does the best. Concord bore abundantly last year.

MONKS & GREEN, West Plains, Howell County:

Grapes do very well in this county. We know of several persons who contemplate planting vineyards.

N. B. BELL, Hamilton, Caldwell County:

Better culture than the average will produce better results. The last season was droughty, and grapes that were grown upon trellises, for want of cultivation both ways, suffered some with the drought. By experimenting without trellis or stakes, last year, I think we can grow grapes successfully without trellis supports, as in California. I think well of pruning old vines to low, tree-shaped heads 2½ feet high. I shall report to you another year's experiment in this way.

JOHN ZIMMERMAN, Amazonia, Andrew County:

The prices given (70 cents) refer to the wine fully made, *i. e.*, from following spring to fall; at present prices are ranging very low, as many vintners are beginners, and are forced to sell their product at any rate, sometimes for an inferior quality too, not having the knowledge and means required to make the best. New wine was sold as low as 25 to 40 cents per gallon.

ALBERT KOCH, Rolla, Phelps County:

Since 1876, the vineyards in the vicinity of Rolla did not yield a paying crop in consequences of rot, *phylloxera*, and unfavorable seasons (too wet), wherefore many grape-growers got discouraged, did not bestow the necessary attention to the grape and the acreage of vineyards was greatly reduced, until this year, when a more remunerative crop gave new encouragement. Concord and Norton's Virginia seedlings are mainly raised for wine-making.

F. A. GROVE, M. D., Kirksville, Adair County:

Our soil is well adapted to grape-growing of many varieties, and I am certain it would be profitable to open up an industry of that kind here. Lands adapted to grape-culture are cheap. Markets are easy to reach, especially to the North, where grapes do not flourish well and are later.

W. S. SCROGGS, Greenville, Dade County:

This part of Missouri is very well adapted to the cultivation of the grape. The native grape is abundant and prolific, but there is nothing here of native or imported grapes that can be called a vineyard.

JAMES CARVER, Guilford, Nodaway County:

Grape-growing and wine-making are yet in their infancy in this county. My business is that of nurseryman and I speak from observation. Nowhere east of the Pacific slope does the grape do better than in Northwestern Missouri.

GOTTLIEB SEGESSEMANN, Amazonia, Andrew County:

The season of 1880 was a favorable one, while owing to rot the average of crops in former years since 1875 was much below that of this year. It is commonly between June 15 and the ripening of the grapes, when the damp weather following rains occurs, that the rot sets in and damages almost all of the *Labrusca* class, and to some extent those of the *Riparia*, but leaves the *Æstivalis* uninjured. It would therefore be desirable to have the latter, represented by the Norton, Cynthiana, and others, propagated more extensively, not only because of the sure crop, but also for the superior quality, which enables them to compete with the best foreign wines. Their cultivation is yet limited, for the reason that their propagation is difficult, slips not growing willingly, and the consequently high price of plants. Nevertheless, they are slowly coming to the foreground.

F. A. KEMPT, Hartville, Wright County:

Almost every householder in the county has some vines planted on his place. The vines in this county are perfectly healthy and the grapes free from any blight of any kind. The county being hilly and on the southern slope of the Ozark Mountains it is especially adapted to grape-culture. The crop seldom fails, and our frosts are usually early, therefore do not effect any harm. Foreigners are principally coming into the county, and vineyards will soon be plentiful. The varieties grown are the best only.

JOHN A. REILLY, Glen Allen, Bollinger County:

The seasons here are always favorable to grape-growing. My vines are nine years old and have never failed. The varieties are Concord, Hartford Prolific, Ives seedling, Norton's Virginia seedling, Herbemont and Delaware. Their hardiness is as follows: Concord rots badly; Diana not so badly; Ives seedling sound, with some rot. The other varieties rot very little and may be classed as sound.

CHRISTIAN HAFFNER, Saint Joseph, Buchanan County:

The crop of grapes in this section of the country, with all the different varieties, was good, free from rot and insects, and it is expected that the wine will be of good quality. I have been trying to make unfermented wine by the use of salicylic acid, with what result I do not yet know, as I intend to let the wine stand 5 or 6 weeks longer, and then fill it into bottles and keep them well corked. At least 150,000 pounds of the grape crop was shipped from Saint Joseph to Kansas, Nebraska, and Northern Iowa.

M. J. WERTHEIMER, Booneville, Cooper County:

This vineyard of 20 acres (or part of it) has been in cultivation for nearly twenty-five years, and has yielded as low as 50 gallons per acre, and as high as 500 gallons per acre, according to favorable seasons; it is situated on the Missouri River bluffs, rising to a height of about 300 feet from the river, and fronting to the east. Our principal wine grapes are the Catawba, although there is a good deal of Virginia Seedling and Concord wine made here; many other varieties of grapes are raised here, but very little wine made from them; our principal market for the wine is home consumption, south and north of here.

A. P. GOFF, Saint Joseph, Buchanan County:

The vineyards in this county are planted in the Concord variety, with some other varieties as table grapes, but these have, in severe winters, proved too tender for general cultivation. The most of our vineyardists are now aiming to market their grapes for shipment to the recently-settled territories west of us.

A. H. TAMTER, Booneville, Cooper County:

Wine-growing is not considered profitable, and is being discontinued by a number of our wine-growers. Reasons: 1. Uncertainty of crops—too much rot; 2. Low price, and no demand even at the low price; no regular market.

NATHANIEL M. RIDGWAY, Trenton, Grundy County :

The past year was more than an average for the yield of grapes as well as all other fruits. Grapes, especially the Concord, seem to be at home in our soil.

L. GEIGER, Booneville, Cooper County :

Greely (?) rot has damaged our crops seriously during the past five or six years. The *Labrusca* kinds have suffered most. The *Æstivalis* and seedlings of the *Cordifolia* are rot as well as *phylloxera* proof. Catawba and Concord are planted to the greatest extent, and these varieties rotted worst in this county.

J. P. LAWRENCE, Pineville, McDonald County :

I find the Concord to be the best grape for this climate, which is fine for grapes generally, if the latter receive proper attention. During the past two seasons my grapes dropped off, though sufficient remained for table use. It appears that some insect stings the grape and deposits an egg, so that the injured berry eventually falls.

R. C. ROGERS, Jefferson City, Cole County :

The soil and climate of this section seem to be very well adapted to the cultivation of many varieties of the vine. But a very large proportion of our vineyards are badly cared for. By careful attention to the business I feel confident that the net results could be largely increased. We need skillful and persistent effort on the part of our wine-growers.

DANIEL CARPENTER, Barry, Clay County :

Grapes are principally marketed in Kansas City, Jackson County, Missouri, at an average price of 3 cents per pound. The wine-makers get a larger yield per acre because of exclusive attention, and their average is about 4,000 pounds, while those having small vineyards make them secondary, and for want of proper care average only about 1,000 per acre. I believe 5,000 pounds can be raised, having a good season, extra care, and the coarser sorts, such as Concord, Norton, Hartford, &c.

J. B. ARMSTRONG, Pleasant Hill, Cass County :

Grapes have been neglected in our county for many years, but are now being cultivated by almost every farmer in the county, and they find it very profitable.

ARTHUR LAGRON, Rhineland, Montgomery County :

The southern part of Montgomery County seems perfectly adapted to wine-growing, but for five years in succession we have been attacked by the rot, for which no cause has been found and no remedy proved successful. Before 1873 the farmers were planting grapevines to a large extent, but since then a great many have dug them out or neglected them. I am among the few that still hope they will get rid of disease. Consequently it would be difficult to say what is the average produced per acre, as in some instances the rot has destroyed the whole crop. Before our vines were diseased they would yield about 4,000 pounds of grapes or 300 gallons of pure wine. If this estimate concerns only the year 1880 I will add that we made about one-third of a crop; that is to say, 1,300 pounds to the acre, and as some have gallized their wine I would estimate the average yield of wine to be nearly 200 gallons.

E. LISTON, Virgil City, Cedar County :

In our county grapes are raised in small patches only, for family use. The surplus is marketed in our towns and villages for table use. Some few gallons are made for home use. Production of grapes in our section for wine or for market is not encouraging because of the low price. Grapes drop from the vine before maturing.

H. SPEISS, Warrensburg, Johnson County :

The Concord is planted most extensively. During the past five years the grape has rotted badly. Before the appearance of the disease we often had crops of Concord amounting to 10,000 pounds and over per acre. During these years, therefore, the acreage in vines has considerably decreased. From an experience of thirteen years I may say that in our county the Norton and Herbemont are as reliable in the hands of vineyardists as vines used to be. The Herbemont needs winter protection. The Concord seems to recover, and last year we had a good crop again.

R. P. GRIMES, Astoria, Wright County :

Grape-growing in Southwestern Missouri is of recent date. The Concord and Norton's Virginia seedling are the best grape we have, the surest and best yielding. I consider this the best grape country in the United States.

WILLIAM CALDWELL, Savannah, Andrew County :

I have not known failure of a full crop in the last thirty-two years.



## C. BOARDMAN, Linneus, Linn County:

There is not more than one-half the acreage in vineyards there was ten years ago, and wine-making is only undertaken at one vineyard in the county. Grape-growing is unprofitable here at present, because there is no market for the crop. Most farmers raise all the grapes they use.

## Prof. GEORGE HUSSMANN, Columbia, Boone County:

Most of the grapes are used for home consumption and market, as this is not a wine-growing community. The largest amount of grapes are Concord, which do not make a very valuable wine. The county is, however, well adapted to grape-growing, and as soon as the more valuable varieties of grapes are fully introduced, could make very fine wines, as the Concord made is of very fine quality. The Agricultural College has in its vineyard now over 130 varieties of grapes for testing; Captain Saunders,  $3\frac{1}{2}$  miles from Columbia, is growing the Elvira and Cynthiana expressly for wine, and has made some very fine samples. I have no doubt that grape-growing and wine-making can be followed with large profits in this county, though it is now mostly devoted to stock-raising.

## N. DE WYL, M. D., Jefferson City, Cole County:

The average crop and the price of wine varies with the variety of grape grown. The principal varieties grown are Concord, Norton's Virginia, Herbemont, and Goethe, and the price of wines from these varieties is, respectively, 70 cents, \$1.25, \$1.50, and \$1.75 per gallon.

## JOSEPH KIRCHGRABER, Springfield, Greene County:

Grapes of late have failed here, with the exception of Norton's Virginia seedling. Ten years ago this county had 50 acres in vines, but they were mostly Concord. I had about forty-two varieties on trial, and had 8 acres in vineyard. Virginia seedling is perfectly at home, and does splendidly. Martha does well, and so also do the Delaware and Goethe in good locations. The Cynthiana is as good as the Norton.

## J. L. BROWN, Forsyth, Taney County:

Grape culture has attracted very little attention here. A few farmers have planted small plots for family use. As far as tried they grow well, and no doubt would prove profitable if the culture were carried on to any considerable extent.

## OTTO VOIGT, Hermann, Gasconade County:

Most of the land planted in grapes could not be used for any other purpose or in a more profitable manner.

## M. D. NORTHUP, Kingston, Caldwell County:

My vineyard is located near the center of the county, in the town of Kingston. The land is rolling to the west; soil from 1 to 2 feet deep, lime rock bottom. The Concord is the only grape that does well in this county. My vines are on trellises, and will yield one-third more than the average for the county. They were set eleven years ago and pruned on the renewal system, the canes not over two years old. They have never failed to give a good crop for nine years. In this locality they do better on trellises.

## N. HOAG, Booneville, Cooper County:

I consider the Catawba grape the best for wine-making purposes; but I observe that the Catawba gives the heaviest wine on land inclining eastward, and on limestone hills or mulatto soil.

## R. H. LANDRUM, Mount Vernon, Lawrence County:

Grape culture in Lawrence County is of recent date, but is increasing very rapidly. Almost all varieties grow and do well here. In fact, every locality where grape culture has begun an increase will be made and largely extended during the next year; so I am informed by parties who have small vineyards. This county produces very large wild summer grapes. The wild winter grape is very common also. We have also what we call the Prairie grape, nearly as large as the summer grape. It grows in small clusters along the beds of dry branches, and its fruit is excellent. One party to whom I applied for weight of grapes produced by him to the acre gave it as 6,100 pounds.

## S. H. AGNEW, Edina, Knox County:

The soil and climate of this county are well adapted to the culture of grapes.

## FREDERICK MUENCH, Dutzow, Warren County:

The cheapest wine is that made of Concord grapes; the most precious wine is the so-called Missouri Black Rose, made from Norton and Cynthiana grapes by a method first introduced by me. Highly promising wines are made from the Neosho and Far

West grapes, both of them quite new varieties of the *Æstivalis* class found growing wild in the primitive forests in Newton County in Southwest Missouri, and first cultivated by me. Of the grape vines belonging to the *Cordifolia* class the Taylor seedlings seem to do best, some of them, such as Noah, Missouri Riesling, Beauty, Amber, &c., yielding a most delicious light wine; but experiments with these and other new varieties have only just begun. Vintners of this country (except myself) have too long depended on the Concord and Clinton, and as these varieties latterly failed from year to year, no progress was made. And yet this county, extending about 60 miles on the northern bank of the lower Missouri River, contains a large number of most favored situations for vineyards which will be sought after and properly used in, perhaps, no very distant time.

WILLIAM B. AMES, Warrensburgh, Johnson County :

Grape culture is in its infancy in this county. The yield was above the average last summer. Much wine was made in a crude way. Some made three qualities from the same grapes. First, the must that drained from grapes after they were broken, best, 80 cents per gallon. Second, pressed juice, 60 cents per gallon. Third, watered pulp, and slightly fermented, then pressed, 40 cents per gallon. I have been investigating this subject lately and believe the above to be correct as grape growing and wine making is now carried on. This is naturally a grape county.

#### NEBRASKA.

JAMES T. ALLEN, Omaha, Douglas County :

Vineyards, comparatively new; success, good; variety, mostly Concord; no trouble with mildew; price per pound, 4 cents, at wholesale. Our bluff lands well adapted to grape growing. Worden, Elvira, Lady, Cottage, Hartford, Goethe, Delaware, do well.

S. G. CHANEY, Wahoo, Saunders County :

I referred this subject to Hon. Peter Lancing of this county, who has had some experience in the matter, and he answers as follows :

"You have requested of me a very difficult service. Saunders County, Nebraska, has only been organized 14 years, and grape culture is a new industry and the acreage is small, as no one in the county has made it a specialty, and grapes here as yet are not of sufficient quantity to make them an article of commerce. Nor has wine-making attained to the dignity of one of the industries of the county, although some excellent wine has been made by individuals for their own use. I interviewed one farmer who has given some attention to grapes, and he reported the result of his experiment on Concords on given number of rods, which, reduced to acres, showed the product in pounds to be 19,200 pounds per acre; and Clintons about the same. Other varieties not sufficiently tested to warrant a correct judgment on their adaptation to the climate, or their commercial value."

#### NEW JERSEY.

THOMAS W. HARRIS, Forest Grove, Gloucester County :

The grape crop was reduced to one-half by rot. It did not affect the grapes until they were nearly full size, when it commenced, to all appearance, by the sting of an insect. Usually 12 pounds of grapes are required to make a gallon of wine, but it took more this year.

FERDINAND WASCHOW, Egg Harbor City, Atlantic County :

Since the year 1875, we have greatly been troubled with the grape rot, destroying at least one-third, more or less, sometimes more than one-half. The Concord, Clinton, Ives Madeira, and Norton Virginia Seedling are most subject to this rot. We have used sulphur on the vines when the grapes were about half grown, but with no effect. Should your department know of any remedy to prevent this rot you would please favor us with any information you think best.

HENRY PFEIFFER, Egg Harbor City, Atlantic County :

This is the best information I can give you of my last crop. Some kinds of course gave as high as 5 tons per acre, as the Ives Madeira, while the Concord rotted so badly I scarcely had 1 ton per acre. The earliest grapes I sold brought \$160 to \$200 per ton as market grapes. I sold the later varieties at \$60 per ton for wine making.

A great change has occurred in the value of different kinds of grapes. Ten years ago the Concord was the best yielding grape, bearing immense masses of the best fruit, while now it hardly pays to grow them, on account of the rot. Ten years ago I could take 25 to 30 pounds from one vine, while last year the average amount yielded was not over two pounds from each vine. The Ives Madeira is now the best bearing variety, because it is not affected by mildew or rot to any great extent.

JOHN R. RUNYON, Morristown, Morris County :

Morris County raises but few grapes for market, and none for wine except for home use, so far as I can ascertain. Some experiments have been made of a few acres, but have not proved successful. One man planted 6 acres some years ago, but the returns, he informs me, did not pay for gathering the crop. Another man planted 1 acre, which yielded one year 3 tons of grapes, but has failed to pay since; another reports 4 acres in vines, and the best yield was one-half ton to the acre, when disease attacked the vines and he has abandoned them.

JOSEPH NEHR, Egg Harbor City, Atlantic County :

Owing to bad weather the grapes have been suffering very badly from rot, especially the Concord; other varieties less. Ives Madeira not at all. The loss is estimated to be about 32 per cent. Of the whole amount of grapes in the county, 80 per cent. are raised in the vicinity of Egg Harbor City.

RICHARD T. COLLINGS, Collingswood, Camden County :

We think there is more to be realized by sending fruit direct to Philadelphia as fast as picked. The Concord is the best variety for market and the most productive. We have a variety called the Rentz, a very prolific bearer, and does not, as yet, rot like other varieties. The White Martha is very good, but tender, and, except for fancy table use, are not of quick sale. The grape crop for 1880 with us was very heavy, but prices ruled low, but after deducting heavy expenses we realized considerable from the crop. We think there is a possibility of land being made too good for grapes, especially if the season is wet, rainy, and foggy, causing rot and mildew where foliage is dense and strong. We think hard and close pruning does better, making less fruit and larger clusters.

J. M. DEMAREST, Mountain View, Passaic County :

The rot prevails in this section to such an extent that the cultivation of the grape is unprofitable. I have experimented with several thousand vines, but finding no preventative or remedy for the disease, have rooted them up and given up their cultivation.

B. H. MUELLER, Egg Harbor City, Atlantic County :

Since 1875 rot has ruined almost the entire crop of one kind, the Concord. The grapes generally commence in June and rot considerably about two weeks, then cease a few weeks, when the balance rot, and before they ripen about three-fourths are rotten. To find the cause of this and a remedy against it would be worth \$50,000 a year.

GUSTAVUS GUNTHER, Egg Harbor City, Atlantic County :

As to grapes, my Concords failed almost entirely, a loss of 90 per cent. from rot, much worse than last year; shall give them one year grace, and if not better next season, shall dig them up or graft over. Ives rotted about 10 per cent., otherwise fine. Martha seems to follow Concord. Clinton rotted about like Ives. Norton's Virginia and Cynthiana healthy and no rot.

CHARLES SAALMAN, Egg Harbor City, Atlantic County :

The average yield of grapes per acre has considerably declined the last three years on account of rot with the Concord, but we are rapidly replacing with other more reliable varieties of the *Estivalis* kind, like Norton's Virginia and Cynthiana.

HENRY BROWN, Vineland, Cumberland County :

The climate and soil of this county are peculiarly adapted to grape culture. The fruit is of excellent quality and makes good wine; our soil is not as well adapted to general farming as to grape and fruit culture. There seems to be considerable prejudice against the wine business, though it is the best of the branches of agriculture in our county and will likely improve, since insects are killing the vines of Europe. We have been troubled some with the rot, but it was not as bad last year as formerly and the farmers have had success in using paper bags to cover the cluster, so that the flavor and quality is much better than otherwise.

JULIUS HINCKE, Egg Harbor City, Atlantic County :

In 1878 this settlement had 615 acres planted in vineyards. Since that time small patches have been laid out, but I would not estimate that the whole was now more than 700 acres. People are slow about taking up grape culture, since it pays so little and the public prefers the fashion of buying imported wine. I can assure you it is difficult to sell enough to meet my annual expenses.

A. S. FULLER, Ridgewood, Bergen County :

A few years since there were several quite extensive vineyards in this county from which considerable wine was made, but they have now been nearly all abandoned or

the fruit is sold in market as taken from the vines. The soil and climate is not well adapted to the grape except in gardens where extra care can be given in the way of manuring and pruning.

NOTE.—Six to ten years since the *Phylloxera* was very abundant on vines in this vicinity, but for some reason or cause unknown it disappeared and I have not been able to find a specimen in the past three or four years.

W. M. DOOLITTLE, Ocean View, Cape May County :

There are no regular graperies in this vicinity ; mostly grown for family use. From 100 to 500 hills is the extent. Considerable wine has been made, but all for home use. But little exported. Grapes are easily raised, very prolific, and have not been affected with mildew, rot, or in fact with any disease common to the grape elsewhere. Probably no section of country is better adapted to growing this fruit than Cape May County, and as yet its cultivation as an article of commerce has been sadly neglected. We have about 100 hills, and for fifteen years past (the time we have lived in this county) have never missed a good yield. I have wine in the cellar ten years old, which is equal if not superior to any foreign wines and improves with age.

ALFRED SPEER, Passaic, Passaic County :

The brownstone shale that abounds in this county renders the soil excellent for red wine. Iron being the nature of the stone and soil gives the grapes deep color and blood-making quality. Port is the principal wine made.

APOLINARE ZACCO, Maine Avenue, Cumberland County :

The soil and climate of this part of the country appear to me to be eminently suited to the growth of the vine and the production of a wine that compares favorably with the unadulterated wines obtainable in Southern Europe, but all efforts to assist this branch of industry will be of no avail unless legislation be had looking to the summary and severe punishment of all and every adulteration of the wine. Even now the pure juice of the grape, carefully prepared, remains in our cellars unsold, unable to sell it at the same price as the adulterated article readily brings in our cities. During the last few years the grape crop has been a complete failure, and the estimates given were based upon the experience furnished before the disease came upon the fruit. In consequence of that and of other causes many in this township have removed their vines, and directed their attention to the ordinary farm crops. My experience in the vine extends over a period of thirty-five years, in Italy, France, and in all the wine districts of the United States of America.

SAMUEL BLISH, New Brunswick, Middlesex County :

The more northern parts of the county are not suitable to grape culture, the soil being a red shale ; but in the southern portion, which is a sand loam, the vine grows very well, is not affected by our winters, and bears well, the fruit commanding a ready sale at good prices in the New York markets, though the local market consumes a large percentage.

W. W. MEECH, Vineland, Cumberland County :

The grape rot is the reason of so low an estimate of the yield per acre. Many in Vineland, becoming discouraged, have dug out their vines.

ALEXANDER W. PEARSON, Vineland, Cumberland County :

It is difficult to give a very accurate estimate of our county production in the absence of statistics. I have made a sort of average of my opinion with that of others. For a number of years past this region has been devastated by the grape rot. Many have been discouraged by it and have extirpated their vines. When the Concord was free from disease here 4 tons per acre was an average crop. Latterly the crop has ranged from 2 tons per acre down to practically nothing.

WILLIAM J. LOGAN, Somerville, Somerset County :

Varieties most planted are Concord, Clinton, Ives, Martha, and Hartford. Concord rotted badly last season. The Clinton is used most for wine ; they average 15 pounds grapes to a gallon of wine. The vines are mostly planted on the mountains and trained to stakes, 6 by 8 feet apart.

F. SIDNEY TOWNSEND, Cape May, Cape May County :

The industry is scarcely introduced, only one small vineyard, say 1 acre, producing 6,000 pounds, all of which are sold by the pound from vines. The soil and climate seem very well adapted for the culture of grapes, and most every resident has vines enough for family use, and scarcely ever hear of a failure of an ordinary yield.

DANIEL DUROE, Landisville, Atlantic County :

About two-thirds of all the grapes rotted in 1880, and about three-fourths of all in 1879, and nine-tenths of all in 1878. In many places in 1878, ninety-nine one-hun-

dredths rotted. If our crop this year (1880) had been entirely free from rot, I should have had 26,000 pounds, or 2,000 pounds per acre, which if made into wine would have made 2,000 gallons, or 154 gallons per acre. Some years ago, before the rot came on us, I picked and sent to market 9,500 pounds of Concord grapes from one highly fertilized acre; but I never had as much since or before. If I had made them into wine I should have had 730 gallons of wine, counting 13 pounds for a gallon, from that acre.

WILLIAM HILL, Flemington, Hunterdon County:

Most of the grapes raised in this county are in small vineyards for the supply of villages or to send to New York market. No wine is made as a business, but only in small lots by the owners of these vineyards, and but very little sold, so that the price cannot be got at. The grape mostly raised is the Concord, and they are troubled greatly with the rot many seasons.

#### NEW YORK.

J. D. HENDERSON, Herkimer, Herkimer County:

There is not in the whole county a half acre in one vineyard. Concord, Delaware, Hartford, Adirondack, and a few other early varieties, ripen well in the valleys of the Mohawk River and West Canada Creeks in this county, but they are all used at home for the table; none are shipped to market or made into wine.

VIRGIL BOGUE, Albion, Orleans County:

This is a fine section for raising grapes, with no diseases or drawbacks of any account. No wine is made in this section, and but small prices paid for the best varieties, as no one ships away and all raise what they want to use. Our grapes are not of the best wine-making varieties, since the Catawba, Clinton, and Isabella ripen here only one year in three. I do not know of one-fourth of an acre in grapes in any one plot in the whole county. Delaware, Concord, Wilder, Merrimac, and Diana grow vigorously and produce fine and well-developed fruit, with but little pruning or cultivation. The people here are more extensively engaged in raising apples, peaches, and grains of different kinds.

THOMAS H. REED, Brewster's Station, Putnam County:

There are no grapes raised in this county worthy of consideration. I do not think there are over 3 acres of grapes in the whole county, except in private gardens for family use. All the grapes outside of such gardens are in small lots near the village of Cold Spring. The fruit is sold in the village. There have been more grapes planted within two years than are now in bearing condition, but the culture of grapes has never been attended with any degree of success in this county. Ten years ago there was at least three times as much land in grapes as at present.

ELLWANGER & BARRY, Rochester, Monroe County:

This is not much of a grape-growing county; do not think there are 100 acres all told; most of the grapes sold fresh in market, prices varying from 3 to 6 cents per pound, according to season and variety. The Rogers varieties command highest prices here. Inferior grades, not marketable for table, are sold for wine at 2 to 3 cents per pound. Wine made mostly by Germans for own use; hear of some small lots sold at \$1 to \$1.50 per gallon.

C. S. HOAG, Lockport, Niagara County:

There is a greatly increased interest in this section in grape-growing, with a promise in the near future of its being the most profitable fruit we can grow. The Niagara is the most promising of the new grapes with us; it commenced ripening the past season August 2, and continued on the vines in good condition to November 6. The Concord, Hartford, and Delaware are the principal varieties grown here or in this county.

G. W. NICHOLS, Hammondsport, Steuben County:

In this region, including Yates and Steuben counties, it is estimated there are from 4,000 to 5,000 acres in grapes. The Catawba is the leading grape for wine and table use and is very successfully grown, and two-thirds of amount grown here is Catawba. We find the side-hill lands sloping to the east and south the best exposure, and with this exposure most all kinds of soil do well. The principal varieties grown and the most successful are, first, Catawba; second, Delaware; third, Concord. The demand for these varieties, both for wine and table use, is on the increase. And I will say the cultivation of the grape in this section, both for table use and wine, for the past fifteen years has been a decided success.

D. S. MARVIN, Watertown, Jefferson County:

Vineyard culture is just commencing; seldom any wine made. We lay down and cover vines for winter. For some reason—climatic, perhaps—the reproductive organs



are more perfect here, the clusters consequently are fuller; our grapes have less sugar and more flavor than grapes grown farther south, and the foliage is less liable to be destroyed by sporadic diseases. Three-fourths of our seasons we ripen *Vitis vinifera* grapes in outdoor culture, and with no protection from glass or artificial heat. I have seen single clusters of White Sweet Water, so grown, weighing three pounds, and clusters of Union Village—a native—two pounds in weight. Grapes ripen here about ten days later than those grown at Rochester.

PETER SANDHOVEL, Mexico, Oswego County:

The above is according to my experience and best of my knowledge. Grapes do well in this county; frosts keep off until November generally, so that most seasons we can ripen the latest kinds of grapes; the only pull-back on raising grapes in the county is in some localities they are troubled with the rose slug destroying the blossoms; have never seen any on my vines. The county borders on Lake Ontario; there are three rivers in the county and a number of small streams. I had 30 kinds of grapes the last season and most all kinds did well. Vines generally trained on trellis, sometimes to stakes, are taken down in the fall, pruned, and laid down; tied up in the spring with wool twine. In July and again in August summer pruned, to avoid excess of foliage and to throw the growth in the fruit.

N. S. RINGUEBERG, Lockport, Niagara County:

The district most suitable for grape-growing in this county is on two bluffs, one rising above the other, and the land lying between, forming a strip of drift land averaging about one and one-half miles wide and being thirty miles long; extending from below Gasport to Niagara Falls; also, a narrow belt along the lake shore. These sections are especially suitable, as they are naturally drained and require but little artificial drainage. My experience of 40 years proves that grapes growing in these belts of land always ripen if properly cultivated.

R. B. DAY, Dunkirk, Chautauqua County:

The Concord grape is being largely set in this county. It is used mostly for the table, ripens early, bunches large, and yields the best of any grape in this section. I have seen six tons taken from one acre. It makes a fair wine. The average price has been 3 cents per pound. It pays us better than any crop we can raise.

JOHN W. BAILEY, Plattsburg, Clinton County:

A few years ago Mr. James McCurdy had planted and was growing about one-half an acre of Delaware and Concord grapes, and made wine that he sold at retail for from \$2 to \$3 per gallon; but I do not think he found it profitable. He has since died, and the wine-making has been given up. I know of but three small vineyards in this county, and none in the adjoining counties of Essex and Franklin. I have something over a half acre of vines that I grow as an experimental vineyard, using the grapes for family use, for sale, and distribution as samples. Grapes grown here are sold at from 8 to 10 cents per pound for eating. Our climate is too cold, and the seasons too short, for growing grapes in quantity at a profit; only the early ripening kinds will pay to grow; those ripening with the Delaware and earlier sorts will pay, and these ripen later here than in other regions which are sent to market before our grapes are ripe take the best prices. I grow vines for sale with other nursery products.

A. F. DEVEREAUX, Clyde, Wayne County:

Regarding the number of acres, the number of vines has decreased every year since the extra "fever" in "60." Small vineyards were all about me in 1865; now there are no vineyards which are kept up in the county except two very small ones and my own, which consists of seven acres. I place the yield at a ton and a half, though Concord and Clintons, and perhaps a few other varieties, yield six tons, and even seven. The most of my vineyard is of Oportos; they do not always yield more than a ton. There are quite a number of Oporto vines in the county, which I have included in my estimate. The owners of these little patches of grapes, although not making wine, sell them to wine-makers, lots as low as 60 pounds being sold. Within the last three years two or more wine-makers have relinquished the business, and consequently many vines were torn up or not given any care. I know of but two places, except my own, where wine is made in the county now. They are very small makers, and unheard of except by local German saloon dealers. There are some saloon keepers who occasionally buy grapes and make wine. Of course some grapes would yield far more than 230 gallons per acre, but the Oporto cuts down the average. Light sweet wines and Rhine or dry wines are sold at about \$1 per gallon in small quantities; but Oporto, or Port, is sold at \$1.50, \$1.75, and \$2 per gallon in quantity.

LORENZO ROUSE, Paris, Oneida County:

The county of Oneida is not, properly, a grape-growing county, the climate not being adapted to the growth or maturing of the crop; consequently only the early varieties

are grown, and those, usually, only a few vines for family use, which are not included in the above estimate; neither are those grown under glass, in graperies. From  $\frac{1}{2}$  to  $1\frac{1}{2}$  acres are grown in certain cases for market, and from these the above estimate is made. I know of only one instance in which the vineyard amounts to  $1\frac{1}{2}$  acres; more generally a single half acre is the extent cultivated for market; and of these cultivators, a few make a few gallons of wine each year to sell to those who prefer it for medical or sacramental purposes, feeling more assurance that it is unadulterated. The grape most generally grown for market and used for wine is the Concord; and too frequently the unripened or immature grapes are used for wine or, perhaps, vinegar. The usual price obtained for grapes in the Utica market is about 10 cents per pound, but during the last season only about 5 cents per pound. The kinds generally grown for family use or market are Concord, Delaware, Hartford Prolific, Rogers' Hybrid, Northern Muscadine, Diana, Creveling, Iona, &c.

JOSIAH SHULL, Ilion, Herkimer County:

Grapevine planting in this county is limited to a few of the better early varieties, specially cultivated for a table grape for family use. In favorable localities, many homestead owners cultivate from one to ten vines. The Concord, Hartford, Creveling, Delaware, Brighton, Rogers No. 4 and 15, Muscadine, and a few others have been a success. Most of the farmers and homestead owners in the valleys of the Mohawk and the near tributaries are raising a few vines. None are raised for profit, only the few as a luxury.

CHARLES O. TAPPAN, Potsdam, Saint Lawrence County:

Good grapes are raised in this county in gardens; they ripen well when intelligently cultivated. From personal experience I have found the Delaware, Hartford Prolific, Northern Muscadine, Rogers No. 4, 9, 15 and 44, Allen's Hybrid, Martha, and Rebecca to do well and produce fine well-ripened fruit.

T. S. HUBBARD, Fredonia, Chautauqua County:

The varieties grown are mostly as follows, their importance as to area planted in each corresponding with the order in which they are named: Concord, Catawba, Delaware, Isabella, Rogers' Hybrids, &c.

REV. F. A. SPENCER, Clinton, Oneida County:

This region is not equal to our interior lake regions in Yates, Schuyler, and Seneca Counties, and yet my yield is as heavy as theirs but not as early in ripening.

REUBEN B. HEATON, Clintondale, Ulster County:

Grapes in this county are mostly of the Concord variety, and nearly all are shipped to the New York City market, selling last fall at about an average  $3\frac{1}{2}$  cents per pound, expenses to come out. No wine made from grapes in this county, except for private use.

BENJAMIN W. DWIGHT, Clinton, Oneida County:

Grapes are raised here chiefly for family use, in small patches in gardens, &c., and with many only in an amateur way, as to varieties. The climate is too cold and the seasons are too backward to ripen most of the better sort. The Concord usually does well here, and is the favorite grape of this region; but often it does not ripen fully, and when it does ripen in color it is too sour to be very palatable to one who knows what first-class grapes are. Two tons to the acre is a good yield here. The Catawba, Isabella, and Diana do not ripen here so as to be sweet and good. I have in my garden (of 100 vines) some thirty varieties, most of which ripen here in good season, such as the Concord, Hartford Prolific, Rebecca, several of Rogers' best varieties (or numbers, as he designates them), and some German grapes brought here from Germany about twelve years ago, "Gut Edel," &c.

In the Iowa latitude, as ours (but near bodies of water), other grapes do far better in Central and Western New York than they do with us, as at Canandaigua, Hammondsport, &c. We have to cover our vines for winter, at least I always do, though some of my neighbors, who raise the Concord grape chiefly, do not.

L. M. GANO, Watkins, Schuyler County:

The vine district in Schuyler County is confined to the east and west shores of Seneca Lake, about six miles on the west and ten on the east. The culture of the vine in this locality is yet in its infancy. There are no "wine-cellar" or manufacturing establishments in the county, and what is manufactured is chiefly in families for family use. The grapes are mostly sent to market in baskets and boxes, and go chiefly to New York, Baltimore, Philadelphia, and other cities and small towns in this State and Pennsylvania.

JAMES R. COX, Auburn, Cayuga County:

I raise but few wine grapes; send my fruit to market at New York, Boston, or Philadelphia. The best fruit grapes are poor for wine, except Delaware, which is a



desirable fruit and makes a very fine cabinet wine. I made but two barrels this season, using only the Iona and Delaware. Very little wine is made on the eastern side of Cayuga Lake or even of Seneca Lake. The Delaware and Iona grape, properly handled, can make as fine and perfect a wine as I ever saw, whether of madeira or sherry.

GEORGE PARKER, Gouverneur, Saint Lawrence County :

So far as my knowledge extends there is no wine made from the grape in Saint Lawrence County except in small quantities. The grape is not cultivated except in gardens, and only a small amount for sale. But the varieties that are grown and the success attained fully warrant the assertion that grapes can be successfully grown here in large quantities for table use. But it is not a settled fact that wine-making is a success.

JOHN H. BUTLER, Penn Yan, Yates County :

There is much more profit in marketing the grapes than making them into wine, as American wines are now so very low.

S. C. HASTINGS, Vine Valley, Yates County :

Grapes this season brought, on an average, 6 cents per pound. Delaware, Isabella, Concord, Catawba, Rogers' 15 and 52, Diana, and Niagara white grapes are being set out; there will be about 75 to 80 acres set out this spring. There are probably about 10 acres of grapes in town outside of the valley.

CHARLES OYSTON, Little Falls, Herkimer County :

There are no vineyards in this county; the climate forbids it, as the mercury falls from 10 to 20 degrees below zero in winter. The entire county is engaged in dairying. We raise a little corn, some hops, and a few grapes in this village, but not one-twentieth of the supply of grapes. Culture of the Isabella has given place to the Concord, which is harder and ripens earlier, and sometimes stands the winter without protection. There is one peculiarity of grapes raised here, the flavor is much finer than those raised in the western part of the State.

JOHN W. BROWN, West Batavia, Genesee County :

Grape growing in this county is confined mostly to a few vines in favored localities near the farm buildings or dwellings, for home eating. A few are marketed in the villages, and a few may be made into wine, in a rude way, for experiment or novelty. I think not over one landholder in four has any vines at all; but their cultivation for home use is receiving more attention than formerly. Those who care properly for their vines receive an abundant reward. Most of the earlier varieties ripen here. We have very little trouble by the winter killing the vines, and I have not known of the fruit being injured by mildew or other diseases.

DANIEL BRADBURY, Kingston, Ulster County :

Nearly all the grapes raised in Ulster County are shipped in boxes for the New York City market. Very little, if any, wine is made, certainly not over 1 or 2 per cent. of the crop.

P. B. CRANDALL, Ithaca, Tompkins County :

The varieties mostly grown are the Concord, Isabella, and Catawba; few of the improved and earlier varieties are grown except in village gardens for family use. I have a seedling of my own raising which I call "Roscoe," that is early, hardy, and superior in quality to any native grape I have ever seen.

N. R. HYATT, Pultney, Steuben County :

The grape business is progressing finely with us. Prices of bearing vineyards have advanced 15 per cent. to 20 per cent. since 1878 and 1879, also other lands that are properly located. Should vineyard men heed the mode of pruning which we advised last year, think it will be beneficial. Prices received last fall were quite satisfactory. Average net per pound  $3\frac{1}{2}$  cents for Catawba, in market, and  $2\frac{3}{4}$  cents for wine making. Concord (black grapes) did remarkably well later in the season, ranging only 1 to 2 cents less than Catawba; on a general average did better than any other black grape.

J. SAGAR, Naples, Ontario County :

As I learn from Mr. W. W. Clark that he has furnished to the Department all the necessary statistical information of the grape interest belonging to this section, I have thought that a short history on the first growing of grapes here, may be both new and interesting to the readers of the agricultural reports. It is an interesting fact that the first grapes grown in the United States, to be disposed of in market, occurred in the village of Naples, Ontario County, New York. Mr. E. A. McKay, a prominent lawyer of this place, conceived the idea of starting a regular vineyard, and early in

the spring of 1854, purchased of a neighbor an acre of ground for that purpose; preparing the ground, as it has since proved, in an unusual and unnecessary way. It so happened at the time, that a number of cattle lately brought from the West, and were being pastured near by, a number of them died, and Mr. McKay getting possession of them, buried portions of them at intervals of 16 feet apart, in the row, the rows being 16 feet apart. Having got the ground thus prepared he went to Rochester and purchased of Elwanger & Barry, the necessary number of Isabella vines. The second year he purchased another acre, set it out, minus the animal manure. His first acre produced an enormous crop of grapes the fourth year. The question then was how to dispose of them. Remembering that he had friends in Montreal, Canada, he purchased ten pound pasteboard boxes, sufficient to hold his crop, and started for Montreal. Mr. McKay had been subject to spells of insanity, so that the worry and flurry of getting to Montreal, and the excitement his grapes produced among the people, and the large amount of money he was evidently about to make, proved to be too much for him, and he became almost hopelessly insane. A person who had accompanied him, sent for Mrs. McKay, who sold the grapes and returned to Naples as soon as possible with her unfortunate husband.

In 1857, W. W. Clarke, a brother of Ex-Governor Clark, of this State, Hon. E. B. Pottle, and C. C. Luther, each started a vineyard of about 5 acres apiece. By the time these vineyards came into bearing there was something of a market and a demand for grapes in the city of New York. The crop from Mr. Pottle's 5 acres netted him \$3,500. During those first years, and most of the time during the war, two and three shillings per pound were readily obtained. About the year 1866, a great many Germans came here and purchased a large tract of hillside land, overlooking the village on the west side, paying from \$100 to \$200 per acre, which before grape growing was thought of could hardly be sold at any price. Up to about 1870, the Isabella grape was the only kind produced, but a few of the Germans began to put in the Catawba. Since the latter date, the Isabella has decidedly lost ground; the Delaware and the Concord have so completely shoved it to one side, it is no longer a profitable grape to raise. The white grape is beginning to attract attention; and it has been proved that the tender sort of white grapes, like the Rebecca, do excellently well when grafted into the Isabella root, and but little is lost in making a change in this way. What has already been done has proved to be good, and the Isabella vines will no doubt all of them be got rid of in this way.

#### JOSEPH ZAHONK, Callicoon, Sullivan County:

This county is situated in the southern line of the State, among the spurs of the Alleghanys. The lands lay mostly at high elevations. The valleys run mostly in a northerly and southerly direction and are much warmer than the elevated lands, but like the former are subject to late spring frosts and early frosts in autumn, circumstances unfavorable to grape culture. Grapes are only cultivated in a small way for family use, and wine making is not carried on to any considerable extent. A considerable portion of the farm and village population cultivate grapes for their own use and for sale in their immediate neighborhood, but so far as known none are sent to outside markets for sale. The varieties mostly cultivated are Concord, Delaware, Isabella, in the order named. In addition to these there are numerous varieties raised experimentally. The Concord meets with most favor, and ripens best. The other varieties are not so certain. The finest grapes are gathered from vines three to four years old. This town is partly settled with emigrants from the vine-growing region of Germany, and it is believed that the sunny slopes of the hills will, under their cultivation, eventually produce grapes in abundance. The writer has a small plat of Concords under cultivation, from which he made this past season thirty-two gallons of wine, but which is yet too new to be able to judge of its quality. No sugar or water were added to the grape juice. The number of vines from which the grapes were gathered is 23, of which 10 bore this year for the first time; the others are from three to six years old. In addition to this production of wine the vines produced a liberal supply of grapes for the table, and some were supplied to neighbors, but no accurate account of the weight of the yield was kept.

#### WILLIAM TOMPKINS, Germantown, Columbia County:

The grape crop for the two last years has been abundant and the quality good; varieties are mostly Concord and Hartford Prolific. The bulk of the crop is sold in New York and Boston and Philadelphia. We find the hill land, at an elevation of 60 or 70 feet, the best adapted to grape growing. Soil is a stony loam of good depth and moderate fertility. Vineyards planted on the hill land are seldom injured in winter, and are never hurt by untimely frost in the spring, and after the third year will need very little manure, and will last with proper care for twenty or thirty years.

#### JACOB WAGENER, Pultney, Steuben County:

Twenty-six years ago the first Catawba vineyard was planted on the western slope of Lake Keuka, by S. L. Wagener and Andrew Risinger, and from this beginning the

great interest in Steuben County originated. In all this time there has never been a failure of raising and ripening a good crop of grapes. The Catawba vine is very hardy, a prolific bearer, and exceptionally free from mildew and all diseases that the grape is subject to in this locality. Thus you see in a quarter of a century a new industry has sprung up that now counts by millions. Lake Keuka is justly called the Rhine of America. The last two years have been exceptionally prolific; very large crops of well-ripened grapes have been produced and very satisfactory prices obtained. The grapes from this locality bring the best prices in the New York market.

## NORTH CAROLINA.

M. J. BATTLE, Whitaker's, Edgecombe County :

The grape-vine flourishes well in this county, the Scuppernong, and Mish specially, is an annual and prolific bearer; nearly every farm has one or more vines, but little wine is made. There is not a "cellar" in the county; the writer has probably the largest area in vines of any one in the county. The grapes grown on my place have been sold to the Messrs. Ganett, at Ringwood, Halifax County, North Carolina. Either of these varieties will produce 100 or more bushels to the acre, and will yield 4 gallons to the bushel, which sells at \$1 per gallon. These varieties are specially hardy, the former a white grape, the latter a blood. I think the Mish is destined to be "the grape" of the South—rich in sugar and makes a superior red wine.

J. F. OESTEL, Morganton, Burke County :

The only varieties that will do well in this county, as I have observed from the few cultivated in my own and other gardens, are Concord, Lincoln, and Catawba. Some have Isabella, but that requires a shed or protection of some kind from the dew.

ROBERT F. PHIFER, Concord, Cabarrus County :

No grapes are grown in this county in as large a quantity as an acre. The entire production of the county would amount to very little. All the growth being used for table, and only about say 100 gallons of wine made in the entire county. Almost all of the varieties do well, the Concord, Catawba, Iona, Ives Seedling, and Delaware being the principal ones cultivated. The Delaware and Catawba make a fine wine without the addition of any saccharine matter of any kind, and would be profitable if cultivated to any extent.

WILLIAM BEAL, Murphy, Cherokee County :

Scuppernong does not do well here; the hardiest and most productive is Concord. Catawba does well generally and is of first-class flavor, but rots sometimes; Iona does well but is rather acid. A grape was sold here from Cumberland nurseries as Iona which is a round black grape, rather earlier than Concord, hangs well on the vines, and bids fair to be quite an acquisition. Cherokee does well where sheltered. Eumelan does not yield well, and we have but few other varieties.

I have labored hard to introduce grape culture here, but have found it hard work. The people are becoming interested in eating grapes, and are beginning to cultivate them for eating. The climate is well adapted to them, and they have not failed but once in twenty-five years in giving me a good crop.

D. BENBOW, Greensborough, Guilford County :

There were formerly several hundred gallons wine yearly, but no market; the manufacture was suspended; being made in barrels it was impossible to find two alike, so we could establish no brand or grade.

JOHN W. EVANS, Manteo, Dare County :

There are no grapes cultivated here; the Scuppernong grape grows naturally, and nearly every residence has one or two vines, and if properly scaffolded will cover over 60 to 75 feet square of ground, and one vine, if good season, will yield 35 to 50 bushels of grapes, which will make 2½ to 3 gallons of wine to the bushel, and require 2 to 3 pounds white sugar to the gallon of juice to make good wine, after standing about three years, which sells readily at \$1.50 to \$2 per gallon. There are two vines now living and bearing grapes every year on this (Roanoke) Island that are from eighty to one hundred years old.

E. HUBBS, New Berne, Craven County :

The Scuppernong vine is generally cultivated, and nearly every planter makes more or less wine, and disposes of the juice at once, quantities varying from a few gallons to 10 barrels each. Instances are noted of 60 gallons from a single old vine. The three vineyards comprised in the 30 acres are not worked systematically, but one of them yielded 65 gallons per acre last year from about one-half the grapes gathered. I think it safe to say that the vines in this county cover 100 or more acres of land, and

that 6,000 gallons of wine are made per year in Craven County, over one-half of which is consumed by the producers.

Dr. L. R. McABOY, Lynn, Polk County:

This region is remarkably adapted to grape culture; as there is scarce any dew on our south side of Tryon Mountain the grapes never mildew. They are never injured by frost. The wild grape flourishes grandly here, and parties have made good wine out of wild grapes. Fruits of all kind succeed, but the grape beyond all the rest.

WILLIAM. J. DOUGHTY, Newport, Carteret County:

The Scuppernong grape is grown in this county almost exclusively. It yields about three gallons per bushel in wine. About one-half of the crop is used for table or eating, making preserves, &c.

J. P. McLEAN, Fayetteville, Cumberland County.

The largest vineyard in our county, and is now perhaps the largest in the State, is owned by Col. W. J. Green; it embraces 140 acres in vines of the best varieties. The Scuppernong grape has heretofore been the leading variety in our county, but it is now being superseded by better varieties. The Scuppernong is the most hardy and prolific grape of our State. Our State legislature is about to pass a "Maine liquor law"; this, I think, will give a new impulse to our vineyards and orchards, as wine and cider will be all the stimulating drinks we can then get.

C. W. GARRETT & Co., Ringwood, Halifax County:

This report is from the result of the crop of 1880, which was a very light crop. About four-fifths of our crop is Scuppernong grapes, one-fifth Concord. Wine from the Scuppernong is much more salable than the Concord. The great hindrance to the wine business in the United States is the fact that it cannot be sold by the dealer, except under the liquor license; this confines it to liquor dealers only, and if the people are driven to the "bars" to obtain a glass or bottle of wine the majority will get that which makes the most intoxication for their money. If our Congress would exempt native wines from this tax, and permit them to be sold as any other agricultural production, free of any privilege tax, the wine production would increase very rapidly. Or if Congress is afraid such exemption would affect the revenues, then pass a law imposing a tax for the sale of native wines only; a tax greatly below the present liquor tax; still permitting these wines to be sold as now under the present liquor tax. This would impose no additional tax on the liquor dealer, and by paying the native wine tax would enable parties to deal in native wines only. Of course this tax should be small. The free plan would be best.

W. W. STRINGFIELD, Waynesville, Haywood County:

The Concord, Isabella, and Catawba grow finely. Several other kinds do first-rate. Little or no attention, however, is paid to it. Our hill and mountain sides would rival the grape regions of the old world, if they had a showing, but we have no market.

GEO. W. SWINDELL, Sr., Swan Quarter, Hyde County:

Our soil generally is well adapted to the growing of the vine, particularly to the Scuppernong and what is termed here the black fox grape, which is a native grape; both of these grow luxuriantly, and some little wine has been made from them, but not for marketing purposes.

E. D. PEARSALL, Kenansville, Duplin County:

The Scuppernong is about the only variety of grape planted in this county, and only a small portion of it is utilized for wine-making, there being no regular wine cellars in the county. Attempts at making on a large scale this kind of wine have proven abortive on account of lack of knowledge of wine-making. Other grapes succeed finely, such as the Paulino, Hartford Prolific, Black Hamburg, &c.

A. C. COOK, Kittrell, Granville County:

Last season we made about 500 gallons wine from wild *Æstivalis*. The must marked 90 to 92 on the must scale. The wine appears to take on a port flavor and a dark red color, and should it come up to expectation, we will probably make 5,000 gallons this season. At present we think very highly of it, and believe our best red wines will be eventually derived from this species and its varieties.

W. C. COFFEY, Boone, Watauga County:

The winters are so severe here that the small branches of the vines generally get killed; consequently I do not think that grape-growing would be profitable in this county.

D. SCHENCK, Lincolnton, Lincoln County :

There are but two or three vineyards cultivated as such in this county, though nearly every farmer has from 5 to 50 vines, mostly Concord and Lincoln. The wine made is by home-made process, and sells from \$1 to \$2 per gallon in small quantities.

L. HARRILL, Brier Creek, Wilkes County :

Grape culture in this county is in its infancy. A small number of persons have planted vineyards of one and two acres each. A neighbor of mine had three-quarters of an acre in vines, only two years old after planting, and made about 200 gallons wine. I have no doubt about our soil and climate both being well adapted to grape-culture.

T. J. STEEL, Rockingham, Richmond County :

This portion of North Carolina is well adapted to the culture of grapes; the Seapernong, Catawba, and Concord bear profusely, and I have never known them to rot. I have a vineyard of about 12 acres, and the yearly yield is from 2,500 to 3,500 gallons of wine, it being yet quite a young vineyard.

DAVID L. BRINGLE, Salisbury, Rowan County :

Our people since the war have pretty generally undertaken the cultivation of grapes; most every farmer in the western part of this county has from a half to three acres planted, and those who have been longest engaged in this comparatively new enterprise speak very favorably of it, and the average increases every year. A gentleman now present who has about an acre in grapes says he has 740 vines to the acre and they will when five years old produce about 15,000 pounds.

#### OHIO.

RICHARD CRAWFORD, Bridgeport, Belmont County :

The balance of the county I am unable to give, but from general knowledge think it would not exceed say 60 acres, largely fruit varieties, such as Concord, Hartford, and Ives. The home section I have reported as Catawbas, including, say 45 acres fruit grapes, mostly Concord. The Catawbas are alone made into wine, and the grapes mostly bought by Cincinnati wine makers, except some 15,000 to 18,000 gallons made from our side of the river in Wheeling. The soil and exposure of the section reported has been the most reliable for the Catawba of any section on the Ohio. Some of our vineyards have been continuously in bearing for thirty years without any evidence of exhaustion, most probably sustained from a soft limestone or marl lying above them.

ANDREW EKEY, Ashland, Ashland County :

The grape crop the last two years has been a failure in Ashland County. The vines look healthy and grow well and give promise of an abundant crop until about the 1st of July; then they commence rotting and in a few days the crop is ruined; some of the berries fall off, and some dry hard and stick to the bunch. Our best horticulturists can't tell the cause or give a remedy. In the adjoining county of Richland they fare no better. I am informed near the shore of Lake Erie they have good crops and not troubled with the rot.

PAUL OLIVER, Perryville, Ashland County :

The grape crop in this county in all the older and larger vineyards the past three years has been nearly a total failure on account of the blast or rot. Young vineyards in the vicinity of the older ones have shared the same fate, while others more remote have borne a fair crop. Nothing new has been discovered in regard to the cause since my letter to your department last year. The disease, if it may be termed such, begun quite a month earlier in *some* of the vineyards than in past years, whilst the others were affected when the grape was about two-thirds full size. In my own and others under my observation it begun when the grape was the size of No. 4 shot. The older and larger vineyards are being dug up and the ground cultivated in other crops. Notwithstanding the general failure the demand was light and the price so low as to be unremunerative where the yield was good. As the consumption of wine is very limited there is little encouragement to extend the culture. If the rot continues a few years longer very few grapes will be cultivated for the market.

JOHN W. Z. SOHN, Hamilton, Butler County :

The most valuable variety in my vineyard is the Venango-grape. It is prolific, not subject to rot, and makes an excellent wine. The Venango has a musky taste. We press all our light-colored grapes, such as Delaware, Martha, Catawba, Colman's White, Elvira, Diana, and other white grapes together, and the different varieties mixed make a better wine than either by itself.



J. W. DOANE, Collamer, Cuyahoga County :

But a small per cent. of the best grapes is made into wine. Probably not more than 50 tons of the best grapes are used for wine. The most of the wine is made from grapes of an inferior grade, not fit for table use. I give below a careful estimate of the number of acres of each variety of grapes found in this county.

	Acres.
Concord .....	900
Catawba .....	450
Delaware .....	75
Other numerous varieties .....	75

Grapes in this section are best on a soil of clay and shale, with soapstone a few feet below the surface. In fact Catawbias will ripen on no other kind of soil, unless it is in an exceedingly favorable season. Concords, however, will ripen on almost any soil, and for several years past have been set out very freely and extensively here. So many have been putting out Concords for two or three years that there is beginning to be an over production of this variety, and Concords do not sell for enough to pay for cultivating and marketing. Last season they did not average over 2½ cents per pound.

There is a strip of land about one and a half miles wide just east of Cleveland, and from six to eight miles long, back a little over a mile from the lake, that seems to be the best adapted for grapes of anything in the county ; in fact, it is where nine-tenths of all the Catawba grapes in the county are raised. It is in the townships of East Cleveland and Euclid. The two towns have over 500 acres in bearing.

W. P. WOLF, Wilmington, Clinton County :

Concord, Ives seedling, Martha, and Delaware the principal grapes grown. The county not well adapted to the cultivation of grapes.

F. J. BÖVING, Jr., Lancaster, Fairfield County :

Ives seedling grapes never failed to produce large crops in this county. Three acres produced 34,000 pounds, which were shipped with 10,000 pounds more to be made into wine. All other grapes, with few exceptions (Clinton and Virginia seedling), have been a failure for the last five years ; therefore many acres in grapes have been destroyed already. The Ives grape is not a desirable table grape when better ones are in the market, but it, the Clinton, and Virginia seedling make very good red wine that competes with the French claret. Concord grapes are a good table grape, but unfit for making good wine. They are short of acid and sugar.

H. G. TRYON, Willoughby, Lake County :

Our best locations for grapes are on the high lands along the lake shore, having a lake exposure and protection of hills or forest on the south or southwest. Thus Collamer Table near Cleveland, Cuyahoga County, possessing these favorable conditions in a great degree, and probably not more than two miles distant from the lake, is one of the best, if not the best, and most successful grape-growing section in the State. The lands sloping towards the lake near Little Mountain and its adjacent heights in this county, though more distant from the water, have similar advantages, a fact not generally discovered or yet utilized by the resident farmers.

E. W. E. KOCH, Toledo, Lucas County :

As a rule all grapes fit for table use are sold in this market whenever the price (for Concords 2 cents, Catawbias 4 cents, Delawares 5 to 6 cents) is not below the average. Concord succeeds excellently in this county, Catawba less so, and Delaware only in favored localities. Few other varieties prosper here. Clinton and Norton's Virginia seedling do best for wine, and are grown for this purpose, not to exceed 5 per cent. in acreage.

Fancy grapes, including Rogers' hybrids, only yield income to the seller of the plants, and disappointment to the buyer. Ives seedling, promising well at first, is too much subject to mildew and dry rot ; for wine it is second class, requiring additional sugar ; is unfit for market, as it brings less than Concord. Hartford Prolifics generally sell for a few days, but when Concords appear are refused everywhere.

As a general rule all attempts to substitute the Concord in this county have signally failed. For our county at least there is yet a grape to be discovered that excels the Concord as a paying market grape.

WILLIAM KRAMER, Dayton, Montgomery County :

We grow largely Ives and Concord, but our main grape is the Norton's Virginia seedling. We had, some time ago, 10 acres of Catawba, but they had to be dug out, the grapes being destroyed by rot and mildew. In place of the Catawba we now raise Elvira and Noah. The Elvira grapes have proved very successful. We made in 1879 from 100 stocks (three years old) of the first bearing 40 gallons of wine, and in the

fourth year (1880) 80 gallons of wine. This grape proves free from rot and mildew. Some time ago there were over 100 acres of grapes in our county which were in a great measure planted in Catawba, but on account of the failure with this grape they were mostly dug out, and the whole amount of acres, besides mine, now planted in vines do not amount to 25 in the whole county. When others became discouraged on account of the failures, and dug them out, I began to plant new ones, and have at times been very successful with them. I now plant a large amount of seedlings, the report of which I cannot give until in later years. The Ricketts seedlings and some other new seedlings, among them the Riesling, are my most important. The seed of this grape was imported from Europe, about twelve years ago, by Nicolaus Grem (Mo.). From 300 plants he raised but 8 good ones. This grape, which is a white grape, has proved very successful. It is free from rot and mildew, and is hardy and productive. I place my main hope in seedlings, judging from my own experience. Our seedlings prove better against rot and mildew for a good many years than any other of the old kinds that have been propagated so many years from cuttings. The hail in August has destroyed the larger part of our grapes, so that we have not as fair a show as we might have had. Our crop will suffer also next year, the severe winter having destroyed most all of our fresh buds. Our main buds show black if they are cut. The principal other place where grapes were largely grown is Miamisburg, where the Catawba and Isabella predominated, but which, I have mentioned before, were dug out on account of rot and mildew, and very few other ones were planted in place of them.

GEORGE M. HIGH, Middle Bass, Ottawa County :

This township (Put-in-Bay) has nearly 1,600 acres of the 2,200, and this year received for the crop grown very close to \$300,000. Three-fourths of grapes are Catawbas; the other one-fourth made up of Concord, Delaware, Ives seedling, Norton's Virginia, Clinton and Schraids seedling, in order named. Prices paid by wine companies last fall, 4 cents, 2 cents, 6, 3, 8, 5, and 5, in order as above, per pound; 450,000 gallons wine made last fall by Wehrle Werk & Son at their cellar on this island. Probably 600,000 gallons in the county. Gallizing is done to considerable extent.

H. S. DOUBLEDAY, Somerset, Perry County :

Grapes are getting to be an uncertain crop in our county, mostly on account of rot and leaf blight. Some varieties fail from mildew. The most sure varieties are Ives and Clinton. Catawbas and Delawares have been a failure or nearly so since 1875, and Concords have rotted badly for the past two years. There have been several vineyards dug out in the last few years, and many are going to dig out next summer.

CLARK NORTON, Hiram, Portage County :

From 30 acres of grapes in my vicinity but a few pounds of fruit were sold and no wine made. This result has been brought about by that strange enemy, the grape-rot. The rot begins here about the first week in July. It has wrought devastation for several years; many have removed their vines; almost every known remedy has been applied, including cultivation, anticultivation, and vitriol. All are becoming discouraged, and probably a year hence few vines will remain.

HORACE Y. BEEBE, Ravenna, Portage County

From a crop report issued by the secretary of the State board of agriculture in November last, we find the number of acres planted in vineyards in 1879 in Ohio .....

1, 045½

Whole number of acres in vineyards in 1879 in Ohio .....

18, 114½

Pounds of grapes gathered in 1879 in Ohio .....

16, 308, 151

Gallons of wine pressed in 1879 in Ohio .....

961, 702

The secretary makes the average value of grapes 4 cents per pound; the average value of wine \$1.50 per gallon.

There is very little, if any, wine made in this county for market, and from the information I can obtain I presume the quantity of grapes raised and wine made during 1880 would be much below the crop of 1879. In some vineyards the crop was a failure.

LEVI STUMP, Richville, Stark County :

A number of acres of grapes have been taken out in consequence of rot. In the past few years more have been taken out than planted.

GEORGE W. CAMPBELL, Delaware, Delaware County :

This is neither a wine-growing nor a large grape-growing locality, and there are no vineyards that may properly be so called in the county. There may be small plantations, from one-fourth to perhaps an acre in some cases, but I doubt if there are more than 10 acres altogether in vines in the whole county, and these are grown almost exclusively for fruit, no wine of consequence made for sale. A few persons make a little for home use, but the quantity is unimportant, and I am unable to give any accurate statistics, but give approximate estimates.



GEORGE W. HOFFMAN, Leipsic, Putnam County :

There is, I am informed, some wine made in the southern part of this county, but I have not been able to ascertain with any degree of certainty the amount nor proportion of the wine yield per acre. As to the yield per acre of grapes, I can give you an estimate of good varieties, such as Hartford Prolific, Concord, Perkins, Isabella, and some of the Rogers hybrids, &c. I think the proper way to plant and train grapes here is to trellis and train up to at least ten feet high. The proper and best plan to avoid crowding is to make the rows ten feet apart, running north and south, and the vines sixteen feet apart in the rows. This will place about 242 vines to the acre. If properly trained they will, after the sixth or seventh year, produce an average of 50 pounds to the vine, and not be too heavily laden to produce and perfect a good quality of well-ripened fruit in all ordinary seasons. This would produce about 12,000 pounds per acre. I think it is amongst the possibilities to make these vines (especially Concord and Perkins) produce double this amount, but to produce the amount indicated of perfectly-ripened grapes will require careful and intelligent trimming and training. And here opens a wide field for the cultivation of grapes. No mere bungler or murderer in trimming has any business in the vineyard if we aim at satisfactory results. The object of all trimming and training is the government of the sap and the twofold purpose of the renewal and preservation of the vine for future use and the production of fruit for the present year. On the plan above indicated in planting grapes the trellis can be completely covered in six or seven years up to 10 feet high, and completely covered from 18 inches above the ground, bars 18 inches apart, and for an indefinite number of years. The sun and air have access to all parts of the vine and trellis, and with good cultivation and fertilization insure the best results in all cases.

G. F. NEWTON, Millersburgh, Holmes County :

Concord is the most extensively cultivated and is the most used for wine-making. As table grapes, the principal varieties grown are Hartford Prolific, Concord, and Delaware. There is no vineyard in this county containing more than two acres of ground. Most of them contain one-fifth to one acre, and many farms only 10 or 12 vines. There is scarcely an owner of a farm or village lot who does not grow a few grapes, most of them enough for their own use.

LEO WELTZ, Wilmington, Clinton County :

Only a small part of Clinton County is adapted to the culture of the grape-vine; though this part, if it was encouraged, would yield good crops, as the soil is well adapted, especially to the following kinds: Ives Seedling, Concord, Martha, Elvira, Delaware, Norton's Virginia. The reason the crop fell short last season was the late frost in the forepart of May, 1880. I may state here that numbers of eyes and even canes of the grape vines are killed by the frost during this winter—1880-'81—and only a partial crop for 1881 may be expected; the thermometer has been down to 16° below zero.

JOSEPH D. BEACH, Coal Run, Washington County :

The grape is subject to many ills—frost, mildew, rot, insects, &c. In 1879, my grape crop was injured by frost, rosebug, and rot. In 1880, hard frost on morning of May 1st seriously injured; rosebug injury, 40 per cent.; rot, very little. Could I have one full crop I think I should gather 24,000 pounds.

F. R. PALMER, Mansfield, Richland County :

Our grapes have rotted for three years, except a few small vineyards remote from other vineyards. I have ten acres of Concord and Martha, and have lost the crop three years; did not get a basket of Concord from eight acres. Until three years ago we averaged 2½ tons per acre, and have grown as much as 5 tons per acre, and all sold as table grapes. Will give my theory in regard to grape rot if desired.

#### PENNSYLVANIA.

RANDALL MORTON, Pittsburgh, Allegheny County :

At present, grapes are not grown in this county for wine, if I may except a few German gardeners who make a little for their own use. What is made is poor, crude, sour stuff. There is a large acreage in grapes, which are cultivated for the market, but as this county is very large and populous, and the industry of grape-growing so cut up in small patches, I am unable to make even a guess at the aggregate. The Concord is the principal variety cultivated, with a few Catawbas and Delawares. Owing to mildew, the Catawba is out of favor, and may be considered a total failure. New kinds are being gradually introduced. Many vineyards of the Concord have been abandoned on account of the dry rot, the cause of which is not understood, as it proves equally bad on all soils and under all conditions. On my place I sold from one acre 8,600 pounds, and I am satisfied I lost 25 per cent. of the crop from rot.

JOHN N. STRAUB, Allegheny City, Allegheny County:

The Catawba grape has been degenerating for the last ten years; *i. e.*, an insect cutting the grape (before maturing) at the stem of cluster, thereby causing the fruit to wither and rot. Also the young shoot bearing the grape is cut by said insect. It is an insect looking like the curculio, with a long bill, which it uses in boring through the vines when tender and young.

A. C. NUTT, Uniontown, Fayette County:

The grape principally cultivated is the Concord, and it seems to reach its highest perfection here for table use. Wine manufacture here is but little understood, and is, with some of them, at least, an experiment not based on what knowledge is available on the subject. I have seen no wine, even second class, made in this county. I have made this report as complete as I could under the circumstances.

JOHNSTON EATON, Fairview, Erie County:

The Concord is the principal variety planted, yet we have the Ives, Hartford, Crevelling, Salem, Lady, Martha, Duchess, and Delaware; the Concord is the most profitable. I find that the grape does best on high ground, a windy location the best. I had 12,000 pounds Concord on  $2\frac{1}{2}$  acres this year.

FREDERICK JAEKEL, Hollidaysburgh, Blair County:

Grape-growing and wine-making is in this part of the country still in its infancy. The mountain slopes of Blair County are admirably adapted for grape-growing. Ignorance on the subject grape-growing has mostly resulted in failures. Then the few vineyards in existence, were planted ten to fifteen years ago, and with kinds of grapes, such as Isabella, Irraella, Diana, and sorts which have been superseded by better sorts. One vineyard of about 2 acres is now being planted with all the later and better kinds, such as Cynthiana, Rulander; Norton's Seedling, &c., but it being only one year old no result has been obtained. The owner now is experimenting with Herbemont, and if, with some slight protection, it would withstand our severe winters, much will be gained for our part of the country.

ROBERT PRESTON, Monongahela, Washington County:

There was this last season in some localities a slight attack of mildew more particularly where the soil was of a heavy nature. As a general thing through this county the last seasons grapes that were on elevated soil, and thereby drained, or on rocky or gravelly soil and had a southerly exposure, were very perfect and gave good satisfaction to the grower and the consumer. The Concord predominates here as yet, but I am of the opinion that the days of this grape are numbered, and in the near future some other variety will have to take its place. There are a number of other varieties that are giving promise of being profitable for this section, Rogers No. 3, Massoit: No. 9 and No. 15, also No. 52 Salem. Either of these are much better for wine and table. I have been insisting on those planting for household purposes to plant of those and some other varieties not mentioned here. There is or has not been any grape as yet that exceeded the Concord in bulk, but in quality there are quite a number that leave the Concords in the shade for either table or wine or in money returns.

A. W. BUTT, North East, Erie County:

The leading varieties are Concord, Ives Seedling, Delaware, and Hartford, either of which makes a good wine. I have been in the grape business to a considerable extent for the past eighteen years, and I find that the Concord and Ives Seedling pay best, both for table use and wine. Grapes grown on gravel make a finer wine than those grown on lighter soils. I have raised as high as five tons per acre of Concord and Ives, and seldom less than three tons. The Ives are the most productive and make the best red wine.

#### RHODE ISLAND.

WILLIAM F. CHANNING, M. D., Providence, Providence County:

Although the native grape grows abundantly in the woods bordering Narragansett Bay and along the water courses which intersect the State, yet the cultivated varieties of American grape fail here in field culture, that is, in the vineyard. I do not think that there are fifty acres of grapes in vineyard in Providence County. The best American and hybrid varieties of table grapes, adapted to this latitude, succeed well in the house yards and gardens of our towns. In my own small garden I have about thirty varieties in bearing, including Concord, Hartford, Delaware, Rebecca, Adirondack, Brighton, Diana, Martha, Allen's hybrid, Vergennes, and a dozen varieties of Rogers' hybrids, which last are among the best bearing grapes in Rhode Island. Wine is made in small quantities by a few amateur cultivators, and, perhaps in a small way for the market by two or three manufacturers. It cannot be said to have any definite market value.

As a fruit for home consumption I should say that the table grape is quite largely raised in private yards and gardens in Providence County.

B. H. LAWTON, Wickford, Washington County :

A great many kinds of grapes do well in this county, such as Delaware, Isabella, Catawba, Concord, Hartford Prolific, Black and White Hamburg, &c. I grow the Delaware and Concord with much satisfaction, more especially the former, which I consider the most delicious grape produced in this section.

JAMES NISBET, Pawtucket, Providence County :

This season has been very poor, owing to the ravages of the rose bug, at the time the grapes are in flower; in some localities, near waters, salt, unless protected by netting or hand picking, the crop has been a total loss. Only varieties suited to this locality, 1st, Concord; 2d, Hartford Prolific; 3d, Delaware; 4th, Clinton. The Brighton promises well; the Clinton is a good wine grape, perhaps the best here.

#### SOUTH CAROLINA.

M. L. DONALDSON, Greenville, Greenville County :

Viticulture for profit in Greenville County, South Carolina, is of recent date, though from the earliest settlement of the country a few grape vines were planted about every household for the use of the family. The greater portion of the above acreage, three-fourths, has been planted during the last six months (last fall and present spring, 1880 and 1881). The large crop of grapes produced the last year (1880), and the most excellent quality of wine produced therefrom, have given quite an impetus to this branch of industry, and, in the opinion of the writer, in the near future this industry will assume considerable proportions in upper South Carolina. The climate and soil of this portion of the State is peculiarly adapted to the growth and maturity of the vine and its fruit. I would further state that this county, more especially the upper, or northern half, abounds in small mountains of gradual ascent, upon the sides of which the grape grows to perfection. These lands can be bought from \$5 to \$10 per acre, and all that is now necessary to produce thousands of gallons of the finest of wines is immigrants from the wine-growing districts of Europe.

E. H. BROOKS, Camden, Kershaw County :

This locality is well suited to the growth of the Scuppernong grape. The crop never fails, and the yield runs over a 1,000 gallons to the acre. The result has been very satisfactory from the experiments made. Other grapes do well, but are liable to rot, which the Scuppernong never does. The yield is from 3 to 4 gallons to a bushel of grapes.

B. PRESSLEY BARRON, Manning, Clarendon County :

No vineyards. Many planters have grape arbors, and the Scuppernong grape is probably the best for soil and climate, as it never fails, but gives a generous yield, requires very little expense, and is a luscious grape. From this grape wine is made, and with proper care as fine a table wine can be produced as could be desired. The Iona, Diana, and Herbemont are planted, but as yet the experiments are of so recent date that no conclusion can be formed. The Isabella and Catawba are grown, but are not always sure.

R. H. MIMS, Edgefield C. H., Edgefield County :

The soil of this county is well adapted to the growth of grapes, as the writer of this has proven by actual experiment on one acre planted in Catawba grapes about twenty years ago; but the fruit of that variety, after the first crop, was very liable to rot, and after two or three successive trials was given up as a failure. There are many varieties now cultivated so nearly exempt from this pest that I think the business of grape-growing and wine-making might be begun with the certainty of success and with handsome profits on money invested. I am quite sure that with properly constructed wine cellars, which need not be costly, and with intelligent management of the wine, and at a far less cost per acre, far more money could be made at wine-making than is now realized by our best planters at cotton-raising, and at the same time make as good a quality of wine as made anywhere else in the world. Land is cheap and can be bought in any quantity. Very soon this place, Edgefield C. H., will be directly connected with Cincinnati, Ohio, and Charleston, S. C., by the grand railroad leading from Charleston through this place, thence to Anderson, S. C., and thence to Knoxville, Tenn., and thence to Cincinnati. I have made, without a cellar, a good dry wine and an excellent quality of sparkling wine.

G. WANNER, Walhalla, Oconee County :

Three years ago I commenced grape culture on 1 acre of ground, and planted the following: Concord, Hartford, Ives seedling, Scuppernong, and Catawba. Had last year a remarkably good success. Sold about \$150 worth of grapes from the stock for table use. Last fall set out 6 stocks from each of the following sorts: Rogers, Clinton,

Delaware, Diana, Iona, Maxatawny, Martha, Salem, Brighton, and Champion. give them all the attention possible, as I want to find out which of these grapes will be the most profitable and healthy for our mountain country. Think grape culture is surer than fruit culture. We have very late frosts in spring here. Had only 2 fruit years in 8, where grapes, to my knowledge, have never been a failure yet. Need the right kind of people to take hold of. The native South Carolinian won't take hold of anything till he sees it experimented by somebody else. I saw corn raised among the grapes in the southern part of Germany, and think our soil, climate, and situation as good as anywhere for grape culture. I am the only one in this county who has grapes to some extent. Clearing and preparing 3 acres more to set out in vines next fall.

#### F. LEUCHER, Union, Union County :

People here have merely a few plants for family use, of which 5 per cent. is taken to make wine. I am the only person in this county who understands the manufacture of wine under the French process, and last year I built a press for wine-making. It is astonishing that the farmers do not take more interest in the culture of grapes, for there is a considerable source of profit in it. Even with the common wild summer grape (*V. astivalis*), and with the *V. vulpina*, the wine or claret made from it is superior to the second grade Bordeaux (Medoc and St. Estephe). I made last year 270 gallons of wine, of which 190 were claret of wild summer grape, and by sample it is equal in color, taste, strength, and bouquet to the well-famed St. Julien. The yield of cultivated grapes as recorded by my press is, for the Herbemont Madeira, 4 gallons juice to the bushel of bunches. I am pretty certain that with good care in selecting only ripe fruit it would reach 6 gallons per bushel. The yield of *V. astivalis* when well ripened and in good condition is  $2\frac{1}{2}$  to 3 gallons per bushel of bunches. The last variety is growing wild to a large extent in this county, and I bought large quantities at 50 cents per bushel for the purpose of inducing the farmers to take interest in the culture of the grapes. I have sold my wine from \$1 to \$1.50 per gallon—but the real market value would not be over 75 cents per gallon. My partner and I planted last year 52 plants, among which are 5 Moore's Early, some Herbemont and Concord, but they will bear only next year. We are determined to make the trial fairly; if it had not been for loss in money we would have set 3 acres of plants this year, so convinced are we that it will pay better than cotton. I have about 5 gallons of Herbemont Madeira claret (?), which, when two years older, will be equal to the Sautesnes.

#### TENNESSEE.

#### WAT CONDEN, Lewisburgh, Marshall County :

The Concord and Ives seedling are the only grapes that I ever knew to be grown in this county; the Concord is the best grape for general use and cultivation in this county.

#### J. E. MANSON, Sr., Murfreesborough, Rutherford County :

This has been handed me by our postmaster, with request that report be made thereon. Grapes do well here, but few are planted. Best wine grape is Ives seedling, which bears heavy crops, and is entirely free from disease. Concord is a sure bearer, generally free from rot, and is very good, but not considered valuable for wine-making. Diana is the best table grape here. There is but one vineyard for wine in the county; this is understood to be successful, but no facts can be given as to amount per acre produced. We have in cultivation most of the standard varieties, including Scuppernong, all of which succeed, but are not used for wine.

#### GEORGE MESTER, Lawrenceburgh, Lawrence County :

There are different grapes in this county, but I have found the Ives seedling grape the best grape for this climate and soil; in this county grape is the best paying crop of anything that can be raised, and does better here than in most any other State in the Union, but as we are away from railroad and river, we have not a good market for them, otherwise I think there would be a greater proportion of wine made.

#### J. C. HODGES, Morristown, Hamblen County :

I have near 1 acre in vines. I do not know of more than fifty vines in any other vineyard in the county. My vines are young, only part of them in full bearing. Judging by the vines that are five and six years old, I should say 16,000 pounds per acre would be the yield on an upland vineyard. This would give over 1,000 gallons wine, as I find that 14 pounds of bunches will make one gallon. The rot is very common, almost universal in this section, except where vines are protected by walls or shelters. Nearly every farmer has from 1 to 12 vines trained about their walls, &c. I find that leaf pruning is a specific for the rot. I begin when the grapes are the size of duck shot, cutting away the older leaves so as to let the sun shine on the bunches, and the air circulate freely around them. Two or three prunings after this manner save my crop, and ripen the crop as perfectly as it is done on Kelley's Island. If leaf pruning is added to the other expense of culture, this is an excellent grape section.

JAMES B. SLOAN, Oconee, Polk County.

I have cultivated 2 acres in vines for four years past and have had no trouble with disease in vines or fruit, and almost every variety of grape does well, but prefer the Concord, Norton's Virginia, and Ives seedling to any other.

M. CRASS, Murfreesborough, Rutherford County:

Grapes are the most certain of our fruits here. They never miss, and sometimes bear remarkably large crops. Many people have from 10 to 100 vines; the fruit is used in the family, making very good preserves, and some will be sold at Murfreesborough from 3 to 6 cents a pound. The great obstacle in the way of making wine is in keeping it. There is not a vaulted cellar in the county, and to be sure no wine can be made, or kept, in a temperature ranging from zero to 100. Another obstacle is the ripening of the fruit in the heat of the summer. We have no variety here that could be kept until anything like temperate weather. Some of the newer sorts were recommended to ripen the latter part of September, like the Gœthe and Hermann, and others, but have not done so this far. The best varieties are Concord, Brighton, Gœthe, Iona, Martha, and, in my opinion, the Herbemont Madeira, of which there is a vine in Murfreesborough, brought there by Mr. Wendell, 40 years ago, and been bearing fruit for 3 generations. The flavor is equal to the best foreign. This State will be a great wine country in time.

LOUIS HUGHES, Dyersburg, Dyer County:

There are no grapes grown in this county, except here and there a vine is found in a garden. Grapes do not flourish here, being too much moisture, frequently rotting on the vine long before maturing.

ROBERT P. CYPERT, Waynesborough, Wayne County:

While myself and some others have for a number of years experimented with the culture of vines on a small scale, I know of no one family who cultivate grapes for market. The result of such experiments, however, has demonstrated the fact that this county is well adapted for grape culture.

CHARLES F. VANDERFORD, Florence Station, Rutherford County:

The cultivation of the grape as a crop for fruit and wine was begun in this county by the writer in 1867—the first vineyard planted in the county. Since that time the business has been gradually extended, only two other vineyards having been planted to this date. Many farmers have planted from one-fourth to one-half an acre, mainly for the fruit for family use. Soil and climate are well adapted to grape growing, and there is no reason why the production of wine may not be largely increased. The writer has made from eighty to two hundred and ten gallons of really good wine per acre from a mixture of Ives's seedling and Concord grapes, wine which brings in market from \$1 to \$1.50 per gallon. Our best wine grape is Norton's Virginia. The difficulty of propagating it, which can only be successfully done by layering, has prevented the making of large plantations of this most excellent grape. Grape-growing for market, or for the making of wine, is still an experiment with us. Those of us who have planted vineyards had every reason for anticipating success—anticipations which have not been fully realized. Grapes, in large variety and of the best quality, are grown easily, subject to few insect enemies and no diseases. But to get the produce of a vineyard fit for market or for wine, we are compelled to surround our yards by an impenetrable barrier—a 10-foot picket fence, or one of equal height of upright planks, being the only protection reliable against thieves. Wines of excellent quality, good body, fine flavor, and keeping well either in the cask or when bottled, have been made by the writer for the past ten years.

ARNOLD DELFFS, Shelbyville, Bedford County:

1. Norton's Virginia is by far the most reliable, vigorous, and valuable grape here; good for wine only.

2. I find that all American varieties (Scuppernong perhaps excepted) require renewal from below the ground every few years. The European method of retaining the old wood for years is altogether inadmissible here, though by doing so temporary large yields may be obtained.

3. Not only frequent renewal is imperative, but also the layering of the young growth. A few inches, say 6 to 9, is sufficient; any shoots coming from the old stool must be suppressed. It shortly afterwards decays, *i. e.*, the old stool.

4. Cuttings coming from shoots that start below the ground are nearly as good as rooted plants, provided said shoots are removed as near the base as possible. But one cutting to be made from each shoot, which may be ever so weak. No matter how refractory the variety or species, with the exception of the Scuppernong, all can be easily grown from such cuttings. I name them stool cuttings, being the first one that discovered their remarkable quality.



J. M. RANGE, Gap Run, Carter County:

I have been experimenting for eight or ten years in grape-growing. My first planting was in low, sandy, and rich land, and I made a failure; I have planted again on an eastern slope, the ground being tight clayey and freestone soil, and my grapes have done wonderfully well; they bear full and mature well, and I think can be made profitable in this country.

JOHN M. MEEK, Strawberry Plains, Jefferson County:

Jefferson County, East Tennessee, lies on 36° north, 990 feet above the level of the sea. Surface undulating, rolling in every direction; soil, limestone; valleys, alternating with silicious ridges. The cultivated varieties of the grape produce abundantly; when cultivated properly "hits" every year, without blight or disease of any kind. Most every family in the county who owns the land cultivates a few vines more or less, for domestic use only. Half of the families make some wine for their own use. The Catawba, Concord, and Virginia seedling the principal varieties cultivated. These are the varieties I have in cultivation. They yield abundantly every year, without blight or defect of any kind. The Scuppernong, Fox grape, and two other wild varieties, are natives of the county.

JOHN PEIRSON, Nicojack, Marion County:

There are no vineyards of any consequence in this county, although the soil and climate are quite favorable to grape culture. Only a few persons have set out from one quarter to two acres, chiefly Concords. We have little rot or mildew.

B. B. BARNES, Memphis, Shelby County:

The only grape used for wine making raised in this county, is the Scuppernong. Early bunch grapes (Concords mostly) are raised for northern markets to a small extent.

J. M. BARKLEY, Jonesborough, Washington County:

I am satisfied that this climate is well suited to the grape culture. The grape is free from mildew. This crop matures well.

#### TEXAS.

W. W. ROSS, Dallas, Dallas County:

We are in our infancy in grape growing and wine making in Dallas County. We have a fine deep-soiled sandy land with fine clay subsoil, the timber growth being hickory, blackjack, post-oak and native wild Mustang grape vines. This land is admirably adapted to the grape, and in a few years we will have some fine vineyards, and will be able, we think, to make good wines.

EDWIN V. RUTHVEN, Blue Branch, Lee County:

Very few domesticated grapes are cultivated in this county from the fact that the wild Mustang, Post Oak summer and winter grapes abound in every part of the county, and afford all the wine the county needs. The few tame grapes that have been planted have succeeded remarkably well. The old Concord, Isabella, and Catawba mature here without mildewing, and their yield is prolific, but not enough of either variety has been planted in any one place to make an approximate yield per acre. Other varieties would doubtless do well here.

WILLIAM BILLINGS, Victoria, Victoria County:

There is a grapegrowing spontaneously here called the Mustang, which makes wine similar to port. Hundreds of barrels made for family use sell for 50 to 75 cents per gallon. Almost everybody (Germans in particular) gathers the grapes and makes wine for home consumption.

W. S. DEATS, Clear Creek, Galveston County:

I am the only person growing grapes in the county. Many persons in Galveston have very fine grapes but only a few vines each. I have to contend with the birds to save my grapes, the mocking bird, red bird, and oriole being very troublesome. Vines of early Concord which budded and bloomed early were injured last season by a severe frost, and some of them have died to the roots. This has been the hardest winter I have seen on the coast.

FRANK M. HOWARD, Cameron, Milam County:

Grape culture in this county is comparatively in its infancy. It has only been about four years that they have been planted at all, although the few that have been planted succeed and bear as fine grapes as I ever saw in any other State. They grow freely, and the fruit ripens well. In my opinion, Texas will in a short time be among the

finest grape-growing countries in the world. In an adjoining county (Robertson) they are cultivated extensively.

EDWARD PERRY, Denison City, Grayson County:

My Concord grapes this season produced a gallon of wine to every 12 pounds of fruit. I infer from this that 750 gallons per acre would be a fair yield in a favorable season. In 1876 most of the vines in this county were planted out, hence no quantity of grapes have been harvested yet. A party within one mile of this city planted out 2,800 vines in 1872 and in '76, '77 and '78 raised quite a quantity of grapes; has made wine without depending on any tests as to quantity of acids or sugar in the must, adopting the plan of adding one gallon of water and four pounds of sugar to each gallon of must; the product was fair, and sold for \$1.25 per gallon. I made this season about 300 gallons wine from Concord grapes, but it is too soon to speak of the quality of the wine, as it has been racked off but twice. In testing the must I used Twitchell's acidometer and Oechsle's must scale. The results were as follows:

[Twitchell's acidometer and Oechsle's scale.]

Date.	Kind of grapes.	Acid.	Scale.	Sugar per gallon.
1880.			°	<i>Pounds.</i>
August 2	Delaware grape.....	23	83	1 $\frac{1}{2}$
August 3	Agawam grape.....	3 $\frac{1}{2}$	75	1 $\frac{1}{16}$
August 4	Concord grape.....	4 $\frac{1}{2}$	63	1
August 12	do.....	0	77	1 $\frac{15}{16}$
August 12	Herbemont grape.....	7 $\frac{1}{2}$	80	1 $\frac{1}{16}$
August 21	Norton's Virginia grape.....	8 $\frac{1}{2}$	95	1 $\frac{1}{16}$

The Concord, having been allowed to remain eight days beyond the time they were considered ripe, to wit, August 12, instead of the 4th, appeared to have lost all trace of acid, and increased materially in sugar. However this increased maturity developed their foxiness to such an extent that people riding past on the road could easily smell them.

Mr. E. B. JOHNSON, Hallettsville, Lavaca County:

The Mustang grape of different varieties and flavor grows along our creeks, and nearly all the wine made in this county is made therefrom. About every other year there is an abundant crop, but the birds and the hogs get the most of it; the former from the branches or vines that climb to the tops of the trees, and the hogs get the benefit of the fallen grapes, for which they as regularly make their rounds as a soldier would go on guard duty. I am under the impression that four gallons of grapes make one of wine. The process of wine making here from the Mustang is as follows: The grapes are first washed in a tub or water-tight flour-barrel, and allowed to stand three days, about which time the pulp and skins rise to the top and must then be skimmed off, and the juice put into casks or barrels. Water is sometimes added, and also sugar, both of different quantities to suit taste or whim of makers. A strong Mustang wine is sometimes thick and will intoxicate quickly. The German population, constantly on the increase, use the Mustang grapes for wine, buying them at from 25 to 50 cents per bushel and selling the wine at from 25 to 50 cents per gallon, generally not less than 50 cents and sometimes as high as \$1 per gallon.

The soil varies so much in different parts of the county that a grape that will flourish in one locality may die in another. The Black Spanish yields well. The revenue laws are detrimental to grape growing and wine making in this section. No one can afford to pay the large income tax, and you will readily perceive the difficulty in getting information from those who make wine, as no man will willingly expose himself to a penalty for wine making.

W. S. ROBSON, La Grange, Fayette County:

Grape culture here is in its infancy, but those who have engaged in it find it to be a profitable employment. The varieties used are numerous, but those which yield the most certain crop are the Southern *Estivalis*, such as the Lenoir, Black Spanish, Herbemont, and kindred varieties. The *Labrusca* family flourish for a few years and then die. The wine from the Herbemont closely resembles the best German Rhine wine, while the Lenoir and Black Spanish make an excellent claret. Grape culture bids fair to be an important branch of our agricultural industry in the near future.

T. V. MUNSON, Denison, Grayson County:

Fruit growing in all branches here is in its infancy. The indications are that we have an extraordinarily good soil, lay of country, and climate for a superior grape and wine region. The past season we had all classes of cultivated grapes, including



several varieties of *V. vinifera*, commonly grown in France, in great perfection. No one has begun wine making systematically as a business, but it is now quite probable several will soon engage in it. Our market facilities by railroad in all directions are very favorable to the fruit grower. There are numerous wild grapes in the forests here which make excellent wine, and some are not bad as table grapes. They are of the *Aestivalis* species chiefly. Some are as large or larger than Concord.

CHARLES KERBER, Ysleta, El Paso County:

Heavy frosts during the first week in April injured our vines very much, and some vineyards did not produce anything. Fifteen pounds of grapes make a gallon of wine. The wine is very sweet and heavy. No disease nor insects injure our vines. The only grapes we have are Mission grape and Muscatel.

Dr. W. B. MORROW, Calvert, Robertson County:

Most of the grapes grown in this county are for consumption at home, and the wine made from them is also used the same way, but little finding its way to other markets. There is made in this county a considerable quantity of wine from the native grapes—the Mustang and Post Oak grape—which grow luxuriantly and yield very large crops. The quantity of wine from these grapes probably exceeds the annual production of the cultivated vineyards.

W. R. COLE, Dallas, Dallas County:

I think the adaptability of this locality to the production of grapes and wine has hardly been tested. The grape industry is in an experimental stage. I know of one vineyard of over three acres, near the city of Dallas, owned by Mr. Bupp. It has been in bearing several years. He sells most of his grapes in the city. His vines are remarkably thrifty and productive. I was raised near the vine country of Lake Erie, and I think his Catawbas are the finest I ever saw. Catawbas are his favorite grapes. They never rot or mildew. Their quality for wine must be good, as they ripen in July. All the varieties grown in the Lake Erie vineyards seem to do well. The same varieties seem to do equally well all about the city of Dallas, where the ground is somewhat sandy. But here on the prairie it is entirely different. I am located three miles from the city, on what is called "white rock" land, *i. e.*, the land is soon underlaid with a soft calciferous lime rock. It is about seventy-five feet higher than the Trinity. Here all the varieties spoken of above have proved failures. The vines start off well in the spring, but as soon as they grow a foot or two the leaves come out smaller and smaller, with a yellow color, and the vines cease to grow. But last year I planted a lot of Hybrids and Viniferas. The hybrids, especially Goetha, Salem and Agawam, and Peter Wily's hybrids, grew splendidly; so did the Black Hamburgs and Chasselas. I have had a few hybrids growing three years. The fruit shows no sign of rot or mildew. From close observation and personal experience I have become satisfied that on the prairie the whole system of culture, as well as the varieties, must be entirely different from that in the sandy valleys.

Dr. D. W. FENTRESS, San Saba, San Saba County:

Grape growing is yet an experiment in this county. The ones which promise best are Black Spanish and Herbemont, both seedlings of the summer grape of the South. The varieties of Vinifera stand our winters well, but we very often have sufficient warm weather in January or first February to start the sap, which is frozen by cold snaps which are apt to visit us the last of February to 10th March. I am mulching this year to prevent this as well as weaving cedar brush through the trellis. I make an excellent wine from the Mustang grape, which readily brings \$1 per bottle at retail—has most resemblance to Port wine.

W. H. PARVIN, Belle Plain, Callahan County:

I think in this section of country the grape could be cultivated without any trouble, as the wild grape grows along all the streams in abundance, some of the varieties being quite large and have a delicious flavor. I do not think, however, they would do very well on our uplands, as this country is too droughty, but along the streams and on all bottom lands I am satisfied they could be raised with the best results, which, in fact, has been proven by experience further east in older settled counties.

P. S. CLARKE, Hempstead, Waller County:

The uncertainty of getting labor for the working of the cotton crop has opened up the grape culture on a small scale, and beginnings of from one to five acres have and are still being planted. This is spoken of as a most suitable county for grapes. The native Mustang yields enormously. The Post Oak (native) and the Muscadine yield well. The two latter, I judge, could be wonderfully improved by cultivation—both sweet.

The following are pronounced best for this vicinity so far:

For eating: Ives, Madeira, and Concord.

For wine: Burgundy or Black Spanish, Norton's Virginia, Herbemont, and Ives Seedling.

J. FRIEDLANDER, Fort Stockton, Pecos County:

Grapes have only recently been raised here, but they do remarkably well, and are very fine. The finest qualities are produced at El Paso and the grapes raised here do as well. This climate is especially adapted to grape culture, but as yet it is in its infancy. About 15 or 20 acres will be planted this year.

R. E. TALBOT, Georgetown, Williamson County:

The wild grape (Mustang) grows very plentifully in this and adjoining counties. Considerable wine is made from this grape. In 1879 I made over 500 gallons of good wine at a cost of 50 cents a gallon, including 2 pounds sugar to the gallon. This wine with age loses its red color, and resembles brown sherry in color and taste.

A. MCFARLAND, Kerrville, Kerr County:

The wild grape exists here in variety both in the mountains and in the valleys. It has been difficult to find a grape that will escape the late frost and dry summers—that is, of the common domestic varieties. Even the wild grape succumbs to these intensities of climate.

JESSE JOHNSON, Camp Colorado, Coleman County:

After making diligent inquiry, I have to remark that there is not a cultivated grape-vine as yet in the county bearing fruit. A few persons have purchased cuttings from nurseries, and it is thought they will do well here.

EMERY SUMMERS, Gatesville, Coryell County:

The grape has been but little cultivated in this section, though it does well. We have the wild Mustang grape, which grows spontaneously in all timbered places, and is very prolific. This variety makes an excellent quality of wine, called here "native" wine. The per cent. of this crop in 1880 is 25.

GEORGE W. VAN VLECK, Woodville, Tyler County:

I am not aware of a single one who has engaged in the culture of the grape in this county. I have lived here for forty years, hence know pretty correctly of this matter. Most of the farmers have from 1 to  $\frac{1}{2}$  dozen of the Scuppernong; only, however, for table use. The reason of their adopting this vine is because it seldom fails in fruiting; while all others, perhaps from a lack of knowledge of how to cultivate and care for, seldom fruit, and when they do fruit from some cause fail to ripen, or only a berry at a time. I have spent some time and money in grape-vines, but from a want of knowledge of their care, &c., failed in my expectations and abandoned it.

AMASA CLARK, Bandera, Bandera County:

Wine has been made from wild grapes called "Frost grape," and still every year some wine made also out of the "Mustang grape." Some of it has been sold at 75 cents per gallon. Most made is used for home use. Cultivated grapes have been tried on a small scale, and have done well, but no vineyards have been planted yet.

T. M. MOORHOUSE, Prairieville, Kaufman County:

As yet little attention has been paid to the culture of the grape-vine in this county, although the various kinds introduced (merely for home use) have done well. For over thirty years wine has been made from the wild grape for private use, and it is to be regretted that so little attention has been paid to its more extensive culture.

W. R. HAYES, Aransas, Bee County:

The only wine made is a sharp, acid wine made from the Mustang or wild grape that grows along the small streams or rivers. I cannot give any statistics as to the amount of this wine that is made, usually about a barrel to each family that make it at all, and it usually sells for 50 cents per gallon. Probably not more than 25 barrels per annum are made in this county.

GEORGE W. LOGAN, Taylor, Williamson County:

As yet very little attention has been given to the culture of grape-vines in this county. I suppose that 2 acres would include every vine in the county. It, however, is the opinion of persons who have a few vines that the culture of grapes will in the near future be a profitable branch of agriculture. I have only about 8 vines which are bearing. These are Southern varieties and yield well. The plants are vigorous, the fruit well matured, and yield abundant. Our "singing" mocking-bird predares upon them to such an extent that unless prevented he would harvest the crop before maturity. My vines are four varieties of the "El Paso" family or variety.

Dr. JOHN R. MACKENZIE, Weatherford, Parker County:

The culture of grapes as yet in this county is only experimental, only few persons having vineyards, and these having borne fruit but for two years past. As for wine little or none has been made. Some two thousand vines will fruit the present year, when we can test it better. I am well pleased with the prospect. I have five acres planted in six or eight varieties, and will fruit 1,500 of the vines this year. I set vines 8 feet apart each way, set to cedar posts three feet high, and fruit near the ground, so that the foliage will protect the roots from the long hot summer sun. No other plan will mature the fruit when we have dry summers, which are common here. Am satisfied the grape can be made almost a perfect success here next to California.

LARKIN DURRETT, Weatherford, Parker County:

The general settlement of this county is of comparatively recent date, hence but few have yet tried the grape. Those who have, have only planted in small quantities, but the grape does well, the yield being very fine. It would be impossible to get at the exact amount planted and cultivated in this county at present. The wild grape is very fine here, growing in abundance all over the county.

L. C. WHITE, Jasper, Jasper County:

My vineyard is young; have a world of trouble getting rid of Northern vines; all are worthless here; I have but two kinds that will do in this climate. 1st. The native wild Foundling. 2nd. The native Concord seedling. These two vines baffle mildew or any other disease. The *Phylloxera* is never found on a vine that has healthy foliage, but always on diseased vines; hence they stay on them to feed upon the decaying vegetable matter—fungus. The *Phylloxera* has no use for a healthy vine for there is nothing for it to feed upon. I commenced upon 22 kinds of vines; all played out now, with a world of work uprooting and replanting past two years. There is no such thing in the United States as a hybrid grape; all crosses. If there is I have it, but has not fruited yet. I have the grape crossed with the balloon vine (which favors both vines) which has not borne yet, but is quite large; think it will bear next season, hence a hybrid. I also have my wild Foundling crossed with the Scuppernong. It also flavors both vines. It is a grape-vine, but has a Scuppernong leaf three-lobed. Perhaps this would be called a hybrid also. It has not borne yet; will this season.

BENTON LANTZ, Veals Station, Parker County:

I do not make wine. There are probably twenty barrels of wine made in this county from the native Mustang grape each year, but as the grape is unfit to eat you can judge of the quality of the wine. American varieties and hybrids all do well, seldom rot, and have not failed to bear during the ten years that my vines have been bearing.

JOSEPH HOPKINS, Brownsville, Cameron County:

No body that I know of in this county have ever turned their attention to grape cultivation. On the few vines planted in gardens of private residences I have known two crops to mature on the same vine in one season in this town, although the quality of the grapes I consider inferior. With proper cultivation, however, the quality may be changed, as the object in growing them here is for shade, training them generally over arbors, which gives a large amount of wood to be supplied with what should go to grapes.

H. H. FORD, Jasper, Jasper County:

There are no vineyards in our county except a small one in connection with a nursery, by L. C. White, at the town of Jasper. Grapes of many varieties grow and flourish well here but are not cultivated as a means of livelihood, some families growing a few for their own use. Mr. White makes some wine every year, which sells readily at an average of \$6 or \$7 per gallon. There are many places in the county where grapes could be profitably grown for wine-making.

O. H. P. GARRETT, Brenham, Washington County:

Grapes are raised in Washington County only in a small way, though this climate is well adapted to their growth. We have a wild grape that grows spontaneously and reasonably abundant, and good for making wine. They are the only grapes used in Washington County of any consequence for wine; other varieties raised for family use in a small way.

C. ERHARD, Bastrop, Bastrop County:

Texas is comparatively a new country. Cotton and sugar are the most valuable and staple products for exportation. Our wild grape, the Mustang, grows luxuriantly over a vast portion of this State. The grape is almost unfit to eat, but when expressed, and with the addition of sugar to the juice, it makes, by proper manipulation, a wine similar to port wine. The Mustang grape contains a quantity of acid and also tannic

acid; therefore sugar helps to neutralize the abundant acid. Of upland grapes we have better qualities—the Post Oak grape and the Mountain grape.

In Texas of cultivated grapes the El Paso from New Mexico and the black spanish and the Herbemont are the only ones which do well in our half tropical climate. That Texas will eventually be a great grape country, I have no doubt.

R. McCCLURE, Palestine, Anderson County:

There are only a few acres in grape-vines in this county. I have only about 250 vines, and they are table grapes, such as Concord, Hartford, Ives Seedling; others have the McKee, a native grape. I do not think the wine grapes such as Delaware, Clinton, Nortons' Virginia Seedling, &c., have done well. From information I learn that last year the Concord and McKee required about one pound sugar to the gallon of juice to make good wine.

JERRY WARREN, Brazoria, Brazoria County:

There is not a vineyard in this county. The whole forest is more or less covered with grape-vines, known here as the Mustang grape. They have been appropriated by a few enterprising Germans, and excellent wine made. The negroes gather them and deliver to parties who want them at about an average of 50 cents per bushel, and they make excellent wine. Many farmers here have a few vines in their gardens which bear very prolific, and of very excellent quality.

PHILIP UNGER, Palestine, Anderson County:

As far as my experience in grape culture goes it is really very limited, as I have not had sufficient room to give it a fair trial. Several varieties of the grape have rotted here, owing to the roots becoming mouldy from not receiving sufficient attention, and until I had tried the following remedy: take from 4 to 6 shovels of fresh cow manure, one pound coppers, one pound ground sulphur, and about 3 pounds of soft soap; mix thoroughly in about 25 gallons of water; let stand about 24 hours; then take the dirt from roots and wash same until about half up the vines. This will give the roots renewed strength.

LEE BEATY, Luling, Caldwell County:

The varieties which do well here are Herbemont, Black Spanish, Catawba, Hartford, and Harwood, the last a new variety of great value. With my experience of eight years and general observation I am led to believe that Western Texas for grape growing is excelled by none and equaled by few States or countries.

J. H. SHAPARD, Brazoria, Brazoria County:

R. Hinze is a Prussian from the Rhine; he is engaged in merchandise, but has some three varieties of imported vines growing in his garden—Malaga, Burgundy, and Rhine; these all do well. He, after several years experiment here, is quite enthusiastic, and says that these vines produce as much fruit and make just as good wine here as on the Rhine. He cultivates as in the old country, prunes as short as possible every year; says that his stock yields 20 to 30, and sometimes as high as 50, pounds of fruit per year, and that the fruit and wine, both as to quantity and quality, compare favorably with the old country; says that the birds are pretty bad on his small patch. He made last year only about fifteen gallons of wine. I report this man's experience because he is an intelligent German. Other parties make small quantities of wine, but scarcely know what kind of vines they have, and know nothing about the right method of making wine. Excellent wine is sometimes made from our native Mustang grape, but I think some parties hit the proper process by accident, for our people really know nothing about it.

J. L. MAYO, Bryan, Brazos County:

Domestic grapes not extensively cultivated in Brazos County, but when they are they generally do well. Favorite kinds are Concord, Isabella, and Scuppernong. Very little wine made from domestic grapes, but large quantities from the wild Mustang grape, which, when managed well, makes a very fair wine. They grow in the greatest luxuriance and profusion all over our woods.

Dr. T. A. SCHMIDT, Cat Spring, Austin County:

The Herbemont is the best and most durable in this county. There are no others in my neighborhood, that is in Austin County, engaged in grape culture; several now are experimenting; in our adjoining county—Colorado—there are several. Grape culture here is yet in its infancy.

M. D. HINES, Cleburne, Johnson County:

I am cultivating successfully the following varieties of grape on black sandy prairie soil:

American grape: Concord, Catawba, Cynthiana, Isabella, Delaware, Rebecca, Hartford, Sugar Water, Warren.



Foreign grape: Black Hamburg, Black Malvoisie, Flame Colored Tokay, Golden Chasselas, Rose of Peru, Verdal White, White Muscat of Alexandria, White Sweet Water, Black Prince, White Malaga, California or Mission grape.

I succeeded in growing two full crops of well-matured grapes on my Catawba and Cynthiana vines last year. Many other varieties made a partial second crop.

WM. A. BLODGETT, Refugio, Refugio County:

The grape culture in this part of the country is in its infancy. The soil and climate seem to be well adapted to its successful growth. The vines are doing splendidly, and if the seasons favor we expect a great future for Texas in the wine crop. We have never in this region been troubled with the Phylloxera in the least. There are a great many small roots, one year's growth from the cutting, going forward to France and California to test their freedom from the foregoing pest in those climates. We sent out a large amount of seed last year from our native Mustang species for the same purpose. The grape mostly grown in this region is the Warren.

J. D. SESSUMS, Belleview, Rusk County:

There seems to be a spirit getting up in the minds of some people in regard to grape culture. You will observe from the figures that there is more money in the amount invested than in anything else. In fact it has been a very great auxiliary to me in keeping up my little farm.

ALBERT G. WARD, Marshall, Harrison County:

Owing to the law of this State we cannot sell wine unless taking out a license as a wholesale liquor dealer, which is a shame and an outrage upon what promises to be a thriving industry.

J. H. KRANCHER, Millheim, Austin County:

So far grape growing as a crop is practiced only on a limited scale; this branch of agriculture has to be developed in the future. Mr. Kessler, of Alleyton, Colorado County, just across our county line, is the most extensive grower in this section at the present time. He grows the Herbemont, principally, as the most suitable grape for the climate. Concord vines will seldom attain a greater age than eight years, while Herbemont will get older than twenty. Concord makes the best wine though. Some varieties of foreign grapes will do very well for a time, as the Frontignan, and others. Several varieties of foreign grapes imported by me from Germany, "Riesling and Traminer," have not given good satisfaction so far. The hard frost on Christmas, 1879, killed nearly all the old vines.

W. M. CAMPBELL, Beaumont, Jefferson County:

There are no vines planted in this county except by one gentleman who has a few besides what I have. I have been in the county about two years, at first not intending to plant except for home use. I procured a few cuttings of several varieties, and they seem to grow and promise so well that I have since procured and now have set about five acres of the following varieties, viz: Concord, Delaware, Iona, Isabella, Catawba, Martha, White Malaga, White Zantic, Black Zantic, Black Hamburg, Muscatello, Sultana, White Chasselas, Scuppernong Flowers, a few of which fruited last year and promise well.

JAS. MARR, El Paso, El Paso County:

The culture of the grape and making of wine have been carried on in the rudest and most imperfect manner here. This country no doubt has great capabilities for the culture of this product, which will soon be fully and thoroughly tested. Only one kind of grape (the old California Mission), known here as the El Paso grape, has ever been properly tested here. The railroads now so near here will bring capital and enterprise, and other and better qualities will be introduced, and I have no doubt successfully.

A. M. HOONS, Dallas, Dallas County:

We have here a light sandy land, with natural growth of hickory, post oak, with red clay foundation, that is admirably adapted to grape culture, and time is near at hand when we will make wine equal to that in California.

A. B. GREEN, Giddings, Lee County:

The Mustang produces more grapes than any other variety. I gathered from one tree five flour-barrels of grapes, and you could scarcely miss them. I think there must have been fifteen barrels on the same tree. Domestic grapes do well grafted on to these wild grapes, and produce enormously.

## VIRGINIA.

THOMAS F. RIVES, San Marino, Dinwiddie County :

The Concord is the favorite grape of this section. It is hardy, productive, and succeeds admirably well. The Catawba is next in favor. As to flavor I consider it a superior grape to any raised in our county. It is not so productive as the Concord. The Scuppernong does well here, also Norton's Virginia, the Delaware, and in fact almost every variety except the Isabella. Virginia is naturally a grape-raising country, and the only surprise is that more vines have not been planted.

J. E. BAKER, Bowen's Hill, Norfolk County :

The varieties mostly cultivated for wine are grapes of Southern origin, such as Norton's Virginia seedling, Scuppernong, Mish, and Flowers. The sorts shipped away in green state are mostly Hartford, Ives, Telegraph, and others, of Northern origin, and which ripen early.

J. H. GRAY, Falls Church, Fairfax County :

Grapes grown in this county are generally as table fruit. Some of our growers have sold to a wine establishment in Washington City. The price was three dollars per 100 pounds delivered in the city at the wine house. I first planted a vineyard in 1870 for the years '73, '4, and '5. My yield was about 3 tons per acre, sold at an average price of six and one-third cents per pound. Since then my vines have been diseased, fruit not maturing. During the past five years I have expressed juice, and bottled it hot, for a communion wine. Some now four years old is perfectly sweet. The "rose chaffer" appears to be my greatest enemy. It destroys the leaf. I shall adopt frequent planting of the vine, as the only remedy I know, say once in three years.

ALBERT DODGE, Norfolk :

The year of 1880 was very favorable for grapes in our vicinity. The bunches and berries were large, and more than the usual quantity of saccharine, and ought to make good wine without sugar; but it is yet too early to tell what it will be. I make but few barrels of wine; dispose of the most of my grapes in our own market. My crop the past season was about 11,000 pounds—say 10,000 Concord, 1,000 Martha (less the wine I made). I have a few vines of the Salem No. 14, Hartford Prolific, and Worden, not in full bearing, but promise well, with the exception of Hartford, which sheds its berries as soon as ripe. I also have a few vines of the Scuppernong and Mish, from which I made about 80 gallons wine the past season. My wine sold readily at \$1, \$1.50, and \$2.50 per gallon, the latter price for three-year-old. In my previous report I gave for the number of acres say  $1\frac{1}{2}$ ; location and soil rather low and flat; sandy loam. Mr. J. E. Baker is about the only one in our county that makes much wine. He has about 48 acres in vines—Ives, Concord, Nortons, and Scuppernongs. Several others have small vineyards, but make no wine.

CHARLES WOOLNOUGH, Mechum's River, Albemarle County :

There are probably one hundred vineyards in Albemarle County, and the area is being increased yearly, while large additions are being made to existing vineyards. At least 1,000,000 pounds must have been grown last season. Two firms in Charlottesville alone used about 500,000 pounds, and very large shipments of grapes were made to New York, Richmond, and the Springs. In the last two years nearly 70 acres have been planted in vines in this county, and the increase is still going on.

F. W. LE MOSY, Norfolk :

Number of acres planted in vines, about 500; average weight of grapes produced per acre, 3,600 pounds; proportion of grape crop used for wine, about one-quarter; average yield of wine per acre, gallons 300 pure juice, 1,000 if manufactured; average value wine per gallon, 50 cents to \$1.25 per gallon. Pure grape juice, fermented without sugar, although developing from 8 to 15 per cent. of spirits, is hard to get off at 50 cents, and I have had to sell as low as 30 cents, per gallon. But manufactured wines with only from one-fifth to one-quarter grape-juice, but strong with spirits, will sell for \$1 to \$1.25 with ease. The manufactured wine costs about 60 cents per gallon to produce, and the natural wine only 10 cents per gallon; even at 30 cents it yields a handsome profit, but finds no customers (only a limited supply). The grapes are sold here from 5 to 10 cents per pound, and pay much better than wine-making at present. The number of small vineyards now existing supply the home demand. But formerly were more extensive. Great calculations were based upon furnishing the Northern markets in July, August, and September with grapes, and it proved a non-paying adventure, and hundreds of acres of vines planted in 1865, '66, and '67 have been abandoned for other products. Wine-making has received a check in this section, in the endeavor to force a natural pure grape-juice upon the people, who like strong and sweet drinks, and the results have caused severe losses upon us who attempted it.

WILLIAM HOTOPP, Charlottesville, Albemarle County:

I have been using every year wood ashes, loam, and other manure to keep up the fertility at a cost of about \$5 to \$6 per acre.

SMITH & ENGLEHARD, Greenfield, Nelson County:

Some of the vineyards are young, which makes the average per acre small; the best yield 600 gallons per acre. The eastern base of the Blue Ridge is equal to any place we have ever seen for grapes. We have 8 acres in grapes, and expect to have in 40 acres in four years from now.

WILLIAM B. BIRD, King and Queen Court-house, King and Queen County:

Grapes do well here, and vineyards could be made as profitable as in any section of the State, I think. The native uncultivated grape of several varieties is abundant all over the county, and some of the kinds very good to eat, and some house wives make a few gallons each of wine as a home delicacy, and it is quite palatable, though made in a crude way.

R. TURNBULL, Lawrenceville, Brunswick County:

Grapes are cultivated here with us principally for family use. I have cultivated the Concord and Norton's Virginia, and they succeeded finely, making large crops. There are not more than a few persons in the county who have as much as an acre in grapes.

J. RAN. BRYAN, Charlottesville, Albemarle County:

Having been for some time secretary and treasurer of our wine company, and being also a grape-grower, I think my estimate approximately correct; it is only made for vines in bearing now. There are probably 25 or 30 per cent. more acres planted not yet in bearing; making a total of, say, 480 acres in the county. The yield in pounds per acre varies very much. The strong growers (Nortons, Concord, &c.) yield from 6 to 10 pounds per vine, and often over (my vineyard averaged 13 pounds one year), whereas Delaware; Alvey, and other weak vines vary from 2 to 6 pounds per vine. Now about 80 per cent. goes to wine, formerly not one-half. The table grapes are too uncertain to sell, prices dropping often below cost of production and freight, &c. It usually takes about 14 pounds of grapes to make 1 gallon of wine, varying from 13 to 16 pounds. The wine value of the grapes depends on the kind, ripeness, &c., and varies from 1½ cent per pound to 5½ cents. The prime cost of grapes for a large cellar this year was about 45 cents per gallon. The wine sells wholesale at from 60 cents to \$1.25. Thus you perceive an average is hard to arrive at, as one year there will be more high grade, and another more low grade, wine made. I am testing a good many new varieties; most of them disappoint our expectations. For wine Norton's is still pre-eminent, though Delaware (could we raise enough pounds per acre) makes a number one wine. Concord still continue the "grape for the million" and for growers, who are careless about their vineyards are as profitable as any, as they stand abuse and bear anyhow. We now "hope great things" from the "Cunningham," as we did from the Lady and Elvira, and with better prospect, as it is an *Æstivalis*. The Prentiss, Lady Washington, and Ricketts last I have not tried. You have the good wishes and thanks of all good men in your endeavor to promote new and diversified subjects for our agriculture. The old ruts are worn down, so if longer followed we would soon be all bankrupt.

A. T. MOSELEY, Buckingham C. H., Buckingham County:

I think this section would produce grapes finely. I have some vines of the Concord, Hartford Prolific, Delaware, Martha, and Wilder. They bear well and appear to do well; they are free from mildew and rot. The wild grape grows abundantly here in the forests and thickets, and I think a vineyard in this section would do well.

W. C. JEFFRESS, Nottoway C. H., Nottoway County:

There are a few small vineyards, mainly for the table. Wherever the grape has been tried here it is a success, and, with the present disposition to diversify labor and get out of old ruts, I do not think it will be long before we will have a grape interest that will be worth reporting. The county of Lunenburg, adjoining us, can boast of several fine vineyards and a very respectable wine interest, about which you will hear in detail, probably, from your reporter for that county.

F. BAIER, Greenfield, Nelson County:

As to the locality of the Castle Hill vineyards, I must say that my observation induces me to decide that it is certainly the finest location I have met with in this country, and certainly compares favorably with the best localities in Germany; in fact, the whole of the eastern slope of the Blue Ridge Mountain is admirably adapted to the growth of the grape, and especially those varieties used in the manufacture of wine. It is not uncommon to find the production at Castle Hill Vineyard double that



obtained from the same acreage in cultivation in other parts of this country. Therefore, from a glance you will observe the peculiar adaptability of this particular locality for the growth and development of the wine interest of this country—an interest that is soon to display an important part in the manufactures of the county.

#### WEST VIRGINIA.

J. LINDERS, Winfield, Putnam County :

The Concord and Ives' Seedling grapes are the only varieties that will adapt themselves to this climate and yield a paying crop, the former having the preference in regard to quantity, the latter for a good keeper and quality.

#### WISCONSIN.

J. C. PLUMB, Milton, Rock County :

Wine-making is hardly a business here, and not any vineyards set apart for that industry. Fresh grapes of good quality bring 5 cents to 10 cents per pound for eating and canning. The Delaware is our most popular variety, next the Concord; Rogers, 3, 4, 9, 15, are all very well liked by careful growers. In close-sheltered locations mildew is common; on the oak hills it is hardly known, and there are our best vines. High lands, limestone soil, and plenty of air are requisite to success in the Northwest.

GEO. J. KELLOGG, Janesville, Rock County :

We do not raise enough grapes to supply the home demand, and cannot afford to make them into wine. We wholesale at 5 cents per pound for Concord; other varieties according to quality; Delaware, Rogers, &c., at about double. There are a great many California grapes sold here at exorbitant prices. The past season mildew and the *Phylloxera* have injured the thin-leaf varieties, so that the Concord, Worden, and that class of grapes, have done much the best and the only ones to tie to. We have to protect our vines, and protected by a slight covering of marsh hay any kinds will winter.

